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Original Articles

GANGRENE OF THE GALL BLADDER. RUPTURE OF THE COMMON BILE DUCT, WITH A NEW SIGN.*

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In 1879 I had the privilege of reporting my first gallstone operation to the American Medical Association. In the intervening years, the surgery of the gall bladder and bile ducts has been so far developed that individual case reports have no place in our overburdened literature, unless, as by their aggregated number, they add weight to some general principle involved in the choice of and time for operation, or throw light on the causes of death in seemingly simple cases. The two case reports, I submit, do not belong to either category, but their comparative rarity must serve as my excuse for presenting them.

GANGRENE OF THE GALL BLADDER.

Patient.—A. B., male, aged 21, was admitted to the Jewish Hospital June 25, 1905.

History.—The patient, whose father and mother are both living, has never, to his knowledge, been ill, except for a pneumonia four years before the onset of the present trouble. Three days before admission he was taken with very violent pain in the lower part of the abdomen. He attributed it to rather free indulgence in beer, which he vomited after ingesting it. Four hours after the beginning of the symptoms the physician who was summoned administered morphia hypodermatically for the relief of the pain, which had become intolerable. Ice bags were ordered and applied continuously. Although the starvation treatment had been rigidly carried out, the vomiting continued at frequent intervals, except when the patient was under the influence of morphia. The diagnosis of appendicitis had been made and operation advised within twenty-four hours of the beginning of the attack. The bowels were moved by enemata.

Condition on Admission.—The patient was well developed and well nourished. Temperature 100 plus; pulse fluctuated between 100 and 120. The patient had a very anxious facial expression and vomited frequently large quantities of bile-tinged fluid. The tongue was dry and heavily coated. The abdomen was very much distended, with marked muscular rigidity on the right side. Percussion showed excessive tympany which had pushed the liver dullness upward. Although the entire right side of the abdomen was tender to the touch, the tenderness seemed most acute in the lower quadrant and in the loin. The blood count showed leucocytosis of 31,600 white.

Diagnosis.—Acute appendicitis, with gangrene probable.

Operation.—An incision was made through the right rectus. When the peritoneum was opened, a considerable quantity of turbid serum escaped. The coils of distended and congested intestine appeared in the wound covered in many places with flakes of whitish lymph. They were held aside with considerable difficulty. The appendix was readily brought into view and removed. While it presented evidence of inflammation like the adjacent coils of intestine, there were no adhesions and no signs of perforation. It seemed evident that this was not the source of the peritonitis. The incision was, therefore, elongated for better exploration. There was revealed a tensely distended gall bladder almost uniformly black and without any luster. This appearance of the gall bladder could be seen, through the large wound, to extend to the very neck of the viscus. The examination was made easy by the absence of adhesions, either recent or old. Before deciding to open the gall bladder, as is my invariable custom, the common duct was carefully palpated for a stone or other tangible cause of obstruction, but none was found. After carefully protecting the intestine with aprons, the gall bladder was incised and about ten ounces of ropy, viscid bile mixed with blood clots were removed. There was no pus. The vesical contents were free of odor, and a number of cultures on agar-agar and blood serum were made. All remained sterile. Most careful exploration of the gall bladder failed to reveal either stones or biliary sand. The operation was completed as an ordinary cystotomy, except that enough gauze packing was inserted about the gall bladder to protect the general peritoneum from a new infection from the sloughing process which was sure to ensue. After thorough toilet of the abdomen, the lower part of the wound was closed by layer sutures.

Result.—The operation left the patient with a pulse of 150; the recovery, nevertheless, was rather rapid. Vomiting ceased at once. For ten days the temperature fluctuated between 101 and 103, when it and the pulse rate returned gradually to the normal. On the third day after the operation, the dressings were saturated with bile, which did not come through the intravesical drainage tube. Five weeks after the operation the gall bladder was discharged almost en masse from the wound. The black slough showed the various coats quite down to the cystic duct. After the expulsion of the gangrenous mass, the biliary fistula healed rapidly. The patient left the hospital September 3. He has since regained full health and weight. The wound is solidly closed.

RUPTURE OF THE COMMON DUCT, WITH AN UNUSUAL SIGN.

For the following history I am indebted to Dr. J. E. Greiwe:

Patient.—W. B., aged 53, occupation, merchant; residence, city.

Family History.—Father died at the age of 65 from cancer of the stomach. Mother died at the age of 84; cause of death, "old age." One sister died at the age of 48 from cancer of the breast. One brother died in infancy; cause unknown. Four brothers are living; one is now suffering from locomotor ataxia. Another of the brothers, at the age of 6, had an attack of infantile cerebral palsy. Two sisters are living and well.

Personal History.—Patient claims not to have had the ordinary diseases of childhood; in fact, not to have been ill until 6 years previously, when he passed through a moderately severe attack of typhoid fever, from which he made an apparently perfect recovery. In April, 1905, he had what appeared to be a very mild case of acute indigestion, lasting not longer than twelve hours. At that time he had no fever, no vomiting, and considered himself perfectly well on the following day. On Aug. 19, 1905, while on a vacation at Prince Edward Island, he was seized with severe, sharp, colicky pains, which he lo-

* Read before the Southern Surgical and Gynecological Association.

cated in the region of the umbilicus. The pain began at 11 o'clock at night after he had retired and continued to be severe all night; it was partially relieved by an enema on the following morning. He was seen by his physician the next day, who pronounced the attack one of acute indigestion, and ordered a dose of castor oil, which secured a very free movement of the bowels. The pains continued, however, but became less and less intense and disappeared after four or five days, during which time the patient remained on a restricted diet. There was neither fever nor chill during this attack, nor was the patient at any time jaundiced. From that time until the onset of the present trouble, October, 1905, the patient considered himself absolutely well, attending to his business and enjoying perfect health. Even on the morning and afternoon of the day when the trouble began he performed his usual duties about the office. The attack came on suddenly at 6:30 p. m., beginning with a severe chill, which lasted about twenty minutes.

Examination.—I saw the patient half an hour after the chill had subsided. He was resting in bed and seemed fairly comfortable, except for a slight uneasiness, not a severe pain, in the upper right quadrant of the abdomen. Pulse and temperature were normal. There was neither nausea nor vomiting. The bowels had acted freely early in the morning. An examination of the abdomen revealed a tenderness, but very little rigidity, in the right hypochondrium. The region of the ileocecal valve was absolutely free from pain and tenderness. The abdominal walls were very soft and relaxed.

Course of Disease.—The patient was ordered to remain in bed and was given nothing, except a dose of Carlsbad salt early on the following morning. During the night the pains in the right hypochondrium became more severe, and when seen early in the morning there was some slight rigidity of the abdominal wall in this region. The Carlsbad salt had been rejected by the stomach. Pulse was 76; temperature, 99. The region of the ileocecal valve was free from pain and tenderness. During the day he was seen at frequent intervals, and, on account of the severity of the pain, which was sharp and cutting in character and now equally distributed over the whole right side of the abdomen, he was given hypodermic injections of morphia. During the day the pulse and temperature, taken at intervals of every three hours, ranged between 76 and 92, temperature 99.2 to 99.8; the pulse was full and regular. An examination of the thoracic organs revealed heart and lungs in good condition. The urine was high colored and acid; the specific gravity was 1024, and there was a trace of albumin. There was no sugar and only a slight trace of indican. The abdomen became very much distended and decidedly tympanitic; no bowel movement was obtained, in spite of repeated lavage of the colon. The patient suffered excruciating pains, which were now localized very definitely on the right, with the seat of the greatest intensity over the lower right quadrant of the abdomen. There was exquisite tenderness over McBurney's point. Again during the night repeated injections of morphia were given to relieve the pain. All efforts to obtain an evacuation of the bowels during the night and following day were unsuccessful. On Saturday the distension of the abdomen continued; there was extreme tympanitis, pain and tenderness, most marked on the right side, and particularly over McBurney's point. There was no dullness on percussion over this area. After this the patient referred all his pain to the lower right quadrant of the abdomen. The temperature at no time on Saturday rose above 99.2, the pulse varying from 86 to 96. In the evening, at 7 o'clock, lavage of the bowels with warm water, glycerin and Epsom salts produced an evacuation of mucus, which was slightly bile tinged and which had a distinctly fecal odor. After this evacuation of the bowel the patient rested somewhat easier, but on Sunday morning, at 3 o'clock, I was called again to see him. The pains in the right lower quadrant of the abdomen had become very intense, requiring the injection of a half-grain of morphia. There was a distinct change in his facial expression, the breathing had become shallow and rapid, the pulse was small, easily compressible and irregular. The abdomen was more distended and very tender on pressure on the right side low down. There was very little tenderness to pressure over the region of the gall bladder. It was evident from the severity of the peritonitis, the extreme distension and the changes in character of the pulse and respiration that the time for an abdominal section had come. The patient at no time had been jaundiced, and it was left for the operator to determine the nature of the peritoneal inflammation.

Condition on Admission to the Hospital.—Patient was a large-framed man, with every indication of intestinal obstruction from peritonitis. His facial expression was anxious, pulse about 130, temperature 100. Examination of the abdomen revealed extreme tympany, with the liver dullness very much pushed up and reduced in area. On inspection of the abdomen, attention was called to a marked jaundice of the umbilicus. The navel was of a distinct saffron-yellow color in strong contrast with the rest of the skin over the abdomen. It was the only evidence of jaundice. Tenderness was extremely marked over McBurney's point.

Probable Diagnosis.—Peritonitis of appendiceal origin.

Operation.—Gas-ether anesthesia. An incision was made through the outer border of the right rectus muscle. When the subperitoneal fat was reached, it was found markedly tinged with yellow. With the opening of the peritoneum, there poured forth a quart or more of free bile mixed with serum. The coils of the small intestine were loosely agglutinated and in many places covered with shreds of lymph. It being evident that we had to deal with a rupture of either the gall bladder or of one of the bile ducts, the incision was rapidly elongated. The gall bladder was found quite empty and retracted under the liver. It could readily be traced to the cystic duct, and neither in the latter nor in the gall bladder was there any sign of inflammation beyond the general redness which appeared everywhere on the peritoneal surfaces exposed. The gall bladder did not seem particularly thickened. After thoroughly removing with gauze sponges the free bile in the peritoneal cavity, it was evident that the flow of bile continued from the aperture behind the gastrohepatic ligament. The fat in the great omentum was very deeply stained with bile. By holding the latter aside and pressing the viscera, with gauze aprons to the left, a tear could be felt in the posterior wall of the common duct, through which the bile without question had escaped. The tear admitted the end of the little finger and it was in the supraduodenal part of the common duct. It could not be brought into view. As careful a search as possible was made for a stone, but none was found. The condition of the patient did not warrant unnecessary prolongation of the operation, which was completed by making a stab puncture through the loin and inserting through it a half-inch drainage tube. A second tube was inserted to the anterior surface of the gastrohepatic ligament. About this considerable packing was placed. The flow of the bile from the posterior tube was very free for three or four days, from which time on it gradually became less and ceased altogether in ten days. From this time on the recovery was uneventful.

REMARKS.

Although the cases presented differ in many important points, they have enough factors in common to warrant their consideration together. In the first place, in each of them, a rapidly developing peritonitis made an operation absolutely imperative as an *indicatio vitalis*. In each of the cases the operation revealed a condition which to the naked eye, at least, had all the signs of a peritonitis, which might speedily cause death. In one of the cases there was an unruptured, but gangrenous gall bladder, the contents of which were proved to be sterile; in the other, free bile in large quantities was found in the peritoneum. Unfortunately in this case cultures were not made, but the gall bladder appeared normal. Since the reports of Naunyn,[1] Hayem,[2] Lane[3] and others, which appeared some fifteen years ago, it has become the vogue to look on normal bile as a rather inoffensive agent when thrown into the peritoneum, and experiments in animals have been often made, notably by

1. Naunyn: Klinik der Cholelithiasis, 1892.
2. Hayem: Gaz. des Hôpitaux, 1889, p. 12. Cited. Erhardt.
3. Lane: London Lancet, 1891, vol. I.

Erhardt,[4] to bear out this view. That bile has a tendency to destroy the virulence of the bacteria with which it comes in contact has been fully established, and this doubtless explains the fact that the peritonitis consequent on lesions of the biliary ways is less likely to become rapidly generalized and fatal than is perforation peritonitis from other causes, such as appendicitis. The tendency to the formation of protective adhesions is greater perhaps also because of the natural diaphragm which the colonic arch and the mesentery form between the biliary ways and the general peritoneal cavity below. Abscess formation and even spontaneous recovery, therefore, are not uncommon. It appears even that postoperative results are excellent. Neck[5] has collected eleven cases of spontaneous rupture of the gall bladder containing stones, with eight recoveries. On the other hand, Korte[6] has seen nine such patients, of whom five were beyond operative help. Of four patients operated on, two recovered. In the fatal cases, death resulted between the third and tenth days. Moynihan[7] and Mayo Robson[8] cite a number of cases in which death resulted from uncomplicated wounds or tears in the biliary ways. It is not safe, therefore, to regard the bile as a too innocuous agent when poured into the free peritoneum. Hahn[9] has recently collected seven cases of rupture of the ductus choledochus of traumatic origin, in all of which the patients died with one exception. In the case of rupture of the common duct reported, it is more than likely that it resulted from the impaction of a stone. That none was found at the operation does not militate against this theory in view of the previous history of the case. Just when the rupture took place it is impossible to state, but probably not later than thirty-six hours after the onset of the symptoms.

Regarding the diagnosis in the cases presented, it must be regretted that a correct diagnosis was not made of the cause of the existing peritonitis. In the case of gangrene, a diagnosis of appendicitis was positively made, and in that of rupture of the common duct it seemed probable that a perforated appendix would be found. The age of the patient and the history of previous attacks of indigestion and of severe colic made us think of the gall bladder as the source of the peritonitis, but concentration of the tenderness in the lower quadrant of the abdomen made it probable that an appendicitis was present. Both cases emphasize the fact that in the presence of peritonitis a doubt as to its source makes for, rather than against, the advisability of an operation.

I wish here to call attention to a sign which was referred to in the case of the ruptured duct before the incision was made, and one to which I believe attention has never before been directed. It is the localized jaundice of the umbilicus. Although a single case is not usually sufficient to warrant the assumption that something new has been observed, this feature was so marked that I can not refrain from believing that further observation will give to this localized jaundice some value as a sign of free bile in the peritoneal cavity. In the case presented, this feature gained in interest as the staining of the subperitoneal fat with bile was observed in the incision through the abdominal wall. The jaundice is probably the result of inhibition. It makes itself manifest first in the integument of the navel, because this part is thinner than the rest of the abdominal wall.

It is possible, of course, that by reason of the anatomic relations of the round ligament of the liver to the transverse fissure there is a retrograde flow of bile through the lymphatics toward the navel, just as the *caput medusæ* is produced in cirrhosis.

Total gangrene of the gall bladder, to my knowledge, has not been observed, except in the case presented, as an affection independent of gallstones. Altogether, total gangrene of the gall bladder is a rare condition. Kehr and Korte[6] do not mention it as an independent affection. Czerny[10] describes two cases of gangrenous cholecystitis due to impaction of a stone in the cystic duct. Both patients were operated on, one successfully. Czerny[10] ascribes the gangrene to pressure on the cystic artery, which, except for a very insignificant anastomosis along the attached surface of the gall bladder, is practically an end artery. In both of Czerny's cases the symptoms were those of intestinal obstruction. The gangrene was limited to the mucosa of the gall bladder. In 1894 Hotchkiss[11] found a gangrenous gall bladder by operation twenty-four hours after the onset of symptoms. A large stone was impacted in the cystic duct. No cultures were made. The patient died. Ferguson[12] reports a case of gangrene, in which operation was performed on the thirteenth day. Many stones were found. The contents of the gall bladder were sterile. Five weeks after the operation most of the gall bladder came away as a slough through the fistula.

In the case above reported, a most careful search failed to reveal the presence of a stone. Moynihan[7] reports a case in which gangrene followed the involvement of the hepatic artery in carcinoma of the pancreas. The etiology of the case above reported is far from clear. There was no infection of the gall bladder at any time, at least not by aërobic bacteria. I believe that the gangrene resulted from occlusion of the cystic artery, although the manner of its obstruction must ever remain a matter of speculation. That it resulted from the excessive vomiting which marked the onset of the attack is more than probable. I am inclined to believe that by reason of this vomiting there was a twist in the neck of the gall bladder which involved the patulousness of both the cystic duct and artery. Theorizing may be in vain and even unprofitable, but it rarely lacks interest.

4. Oscar Erhardt: "Ueber die von d. Gallenwegen ausgehenden Peritonitiden."
5. Neck: "Perforation de Gallenblase." Deutsch. Zeitsch. f. Chir., vol. lxxi, p. 334.
6. Korte: Beit. z. Chir. der Gallenwege, 1905, p. 192.
7. Moynihan: "Gallstones," p. 167.
8. Mayo Robson: "Gall Bladder and Bile Ducts," p. 68.
9. Hahn: "Subcutane Rupture d. Gallenwegene." Long. Arch., vol. lxxi, p. 1024.
10. Czerny: "d. Nekrose d. Gallenblase," Munch. Med. Wochft., vol. I., p. 929.
11. L. W. Hotchkiss: Annals of Surgery, vol. xvii, 1894, p. 197.
12. Ferguson: THE JOURNAL A. M. A., Jan. 24, 1905.

THE REGULATION OF PROSTITUTION.

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Every American traveling in the United States and everyone who goes abroad has often cause to blush when he finds useless and long worn out methods of various kinds introduced and seriously tested, to the great inconvenience of the body politic.

One of these systems, whose ominous mutterings I hear first in one part of the country and then in another, as it threatens to saddle its incubus on our long suffering people, is the regulation of prostitution by some sort of governmental sanction and control. Now, *"réglementation"* or regulation has been so thoroughly tested in

Europe, and with such conspicuous failure, that the Society of Sanitary and Moral Prophylaxis, of which the noted syphilographer, Dr. Prince A. Morrow, is now president, in taking up the question of dealing with the social evil and its attendant diseases, does not even propose to discuss at its meetings any papers advocating regulation. Surely our legislators, as well as those of our physicians who have but a limited knowledge and experience in such matters, can well afford to be guided in regard to them by the eminent experts who constitute the active members of the society and who hold this positive conviction without any bias whatever.[1]

Given an evil, a sore on the body politic, the first impulse of the inexperienced enthusiast is to rush to the legislature to have a law enacted to the effect that the sore must not be there, or else that so long as the sore persists in remaining there, a committee of the legislature, or an emissary in the shape of a political doctor, shall pay the locality regular visits and spend valuable time in contemplating the sore, in order to see that it does not grow worse, with the idea, apparently, that a salutary restraining influence is thus exercised over it, through the high moral influence (*sic*) of his presence. In all this the twentieth century legislator recognizes unlimited graft, and he becomes an eager abettor of the callow philanthropist. This farce has gone so far, indeed, in the matter of the regulation of vice, that, had it not been for the women of our land, we should long since have been laboring in the slough of this most pernicious of all forms of legislation in every city in the land.

The only system as yet tried in this country is, as I have elsewhere said, that of utter indifference. As might have been anticipated, this has proved a disastrous failure, and we are in consequence called on to face the renewed efforts now being made to introduce another and even worse system, namely, that of regulation, which has so conspicuously failed elsewhere. It is saddening and disheartening to reflect that it is almost 2,000 years since we heard the fundamental declaration that "by the law is the knowledge of sin," while we stand here, in the midst of our boasted civilization, actually proposing that by the law sin shall be made safe and easy, corrupting the very standards of righteousness and justice at their fountain heads and placing the burden of proof that immorality is sin on him who would uphold right and purity.

If then experience at home has shown that indifference is a failure, and experience abroad has proved that regulation is no more successful, is there any remedy for this evil in our midst, and if so, what is it? A remedy there is, but it is not an easy remedy. It is of a drastic nature and acts on the whole system in order to purge this sore, cleansing the body of many noxious humors and sending good sound blood to the spot. This remedy is a sense of personal responsibility, which manifests itself under the form of an active, aggressive interest in this as well as in all other forms of right doing, by carrying on an unremitting personal campaign against them, wherever and under whatever guise they may be found. A high standard of morals must be maintained in every avenue of life, for nothing is more certain than that this impurity cannot be removed, or even lessened, while the business and social life of the community remain corrupt in a thousand different ways.

1. "What is the Right Attitude of the Medical Profession Toward the Social Evil?" THE JOURNAL A. M. A., March 4, 1905. "The Best Way to Treat the Social Evil," Med. News, June 24, 1905.

Now simply to state that we need a higher standard of morals is but expressing the fact of the disease in different terms, and conveys no power of reform. We do not need knowledge, as some of us imagine; we need some transforming, regenerating power from without to enable us to accomplish that which our corrupt tendencies continually hinder. For this reason my own hope lies solely in God and in prevailing on men to look to Him for grace and strength to do that which they can not of themselves accomplish. Such a definite, real, personal approach to God is offered to us by our Christian faith, and where the faith is real it confers this power. "Sin shall not have dominion over you." But while it is eminently proper to point to this, in my belief, the one true remedy, the present is not the place for a full discussion of this subject.

If you tell me that the course I suggest is an impossibility I answer, neither is there any balm in Gilead for this wound. But if it can not be remedied, at least do not let us debauch public morals by making the very laws of the land panderers to vice; because our feet are in the mire is no reason why we should wade in waist deep.

Before leaving this subject of regulation I wish to present the translation of an important article which details the experience of an enthusiast for regulation, who carefully observed and studied the methods in vogue in Brussels and in Paris, and then had an opportunity of testing them while in an official position of his own at The Hague—I refer to Professor J. L. Chanfleury van Ijsselstein. I consider his testimony the more valuable because he was at the outset, as I have said, an ardent advocate of regulation and entered on his career with enthusiasm, yet he speaks here, after some years' experience, as a converted skeptic.

If regulation, tested under such favorable circumstances, has failed in a country where law is, in some degree at least, respected, how can a like plan succeed in a country like ours, where the very term legislator has become a byword for corruption; where laws are made to be evaded and set aside by expensive processes, quibbling, and disheartening delays, and where every man does that which is right in his own eyes.

I quote Professor van Ijsselstein, therefore, hoping that his experience may prove "a word to the wise."

THE REGULATION OF PROSTITUTION FROM THE POINT OF VIEW OF PUBLIC HYGIENE.

BY PROF. J. L. CHANFLEURY VAN IJSSELSTEIN, GENEVA, 1889.

Regulation of prostitution was first established in the hope of restricting the extension of venereal disease. By such means it was hoped that infections would be traced to their origin, and the public thus protected against diseases which incontestable experience shows are productive of the most formidable consequences. This is done by isolating the infected women and thus making it impossible for them to injure others. As it is, even persons whose habits of life forbid us to imagine that they have acquired an infection through their own fault, are not insured against it, but must often suffer for the sins of others.

Such an object is surely a praiseworthy one, and there is no reason why we should, as we are too easily tempted to do, assume a less honorable motive in the establishment of regulation. If our food and drink are subjected to a minute analysis in order to detect adulteration and prevent disease, it might be thought that in the very name of justice, women, considered as necessary to the satisfaction of the sexual instinct, might be regarded as equally adapted to protective measures. From this point of view the authorities might well wish to manifest their foresight by placing the means of healthy coitus, as well as of healthy nourishment, at the disposal of the public.

In any discussion as to the efficacy of regulation, such motives should be regarded as beneath the dignity of those in authority, as well as of the physicians in charge of this service.

The purpose of our undertaking is to inquire, as far as possible, into the results of the regulation of prostitution from a medical point of view. To accomplish this end we must determine the conditions under which examinations should be made, and ascertain what infections should be considered as dangerous or suspicious. We must also, of course, inquire whether the medical officials in charge of the examinations are really of the highest standing in their profession. The following question has for a long time awaited an answer: Does or does not the periodical examination of prostitutes afford sufficient guarantee against contagion? The gist of the whole matter is, indeed, contained in it, for a medical examination which gives no security against contamination is probably productive of more harm than good.

In order that examinations shall afford a sufficient guarantee against possible contagion, it must be possible to isolate, not only the women affected with contagious venereal disease, but also those under suspicion of it. Therefore, not only all prostitutes who present unmistakable evidence of infection, but also all those who require to be kept under observation because their true condition can only be determined by subsequent examination, must be restrained from the exercise of their profession. All cases of primary syphilis must be isolated, and also all cases of secondary syphilis in the condylomatous stage. In other words, every woman who has a primary lesion, or in whom it is suspected, must be restrained from spreading infection, and also every woman who presents condylomatous symptoms, or who is passing through the condylomatous stage of the disease, even without the external manifestations of it.

Every erosion, vesicular or pustular, and also every congestion or turgescence which resembles the first stage of an initial sclerosis, on whatever part of the body it may occur, must be suspected of being a primary lesion. It is impossible to designate any characteristic sign by which these manifestations can be distinguished from those which are not contagious; even their situation is only a relative indication of their nature. Isolation of the affected person is essential, because it is only by further observation that the real specific character of the disease can be determined.

In constitutional syphilis, mucous patches and everything resembling them must be considered as potentially contagious. Thus an eczema interigo, situated not only on the genital organs, but between the fingers or toes, may conceal a mucous patch. In the same way a trivial redness at the corner of the mouth, on the tongue, or, above all, in the region of the tonsils, which is, at first, indistinguishable from a catarrhal affection, may be the earliest appearance of a mucous patch and fully as contagious. This is why it is hard to distinguish mucous patches from the lesions characterized under the name *leucoplakia*. This latter affection, which is of long duration, should always be regarded as suspicious. Indeed, women passing through the condylomatous stage are dangerous, even without external evidence of it, for they can contaminate through both the blood and the secretions.

From the point of view of risk of contagion, it is important to note that it is exactly the more obvious manifestations, such as syphilitic lupus and other later ulcerative indications which are least contagious or not contagious at all. The majority of syphilitic manifestations are barely perceptible or extremely mild in appearance. There is, of course, an exception in the fact that latent syphilis can be communicated during the condylomatous period, for incontestable cases of it have been established. And in the presence of so dangerous a disease all exceptions must receive careful attention, above all if in so doing we secure ourselves more surely aginst infection. Blennorrhagic affections are of no less importance. It is claimed that they do not, like syphilis, induce blood poisoning. This is incontestable, but they are none the less capable of sometimes poisoning the lives of persons afflicted with them. Moreover, the numerous sequelæ, whether mild or severe, which may result from blennorrhagia, are well known. The most frequent of these is stricture of the urethra. I have known persons whose whole existence was made miserable by reason of this infirmity, in spite of the most skillful treatment. They failed to achieve the social position to which they might have aspired and fell victims to premature death. It is unnecessary to enumerate the serious inconveniences and organic troubles which result from stricture, for every practitioner has had opportunities to observe them.

Blennorrhagia in women is extremely difficult to establish. It is very hard to discover the existence of a chronic urethritis in a prostitute, if she has taken care to remove the secretions immediately before examination, yet such an urethritis retains its capacity to infect for a long time. It should be suspected whenever continuous pressure on the female urethra occasions the escape of even a small amount of muco-pus, for it has often seemed to me that even this slight degree of the affection was sufficient to communicate blennorrhagia to men. Moreover, it must be noted that whenever a woman has once been affected with contagious blennorrhagia she can communicate the infection by means of coitus for a very long time, a much longer period, indeed, than is the case with men.

The same thing occurs in affections of the neck of the uterus. When the secretions from the cervical canal are not clear, or when they do not remain clear in spite of excitation, the physician must be on his guard. Every expert recognizes that in this respect very few prostitutes are in favorable condition.

All these considerations show that a well-conducted medical examination is a most onerous undertaking, which demands practical knowledge, and which depends for its success on the discovery of the slightest trace of infection. It is hardly necessary to add that much time must not be permitted to elapse between the examinations. An examination every day would not be excessive.

I am well aware that these matters are not usually considered in this light, but when I relate the observations which I myself have been able to make, the reader must certainly acknowledge that the subject is commonly treated much too lightly.

Some years ago I went to Paris and to Brussels for the special purpose of studying this question as thoroughly as possible. These two cities had, at that time, the reputation of carrying out the method of official control and treatment of prostitutes in the best possible manner. I had opportunities to observe the examination of prostitutes at the *bureau des moeurs* in Paris and of following attentively the methods employed by the medical men. I was also present during the examinations at the public brothels, and I feel it right to say that a large number of women were examined in a manner so superficial that I was astonished. The inspection was limited, in general, to the genitalia, and consisted principally in a rapid use of the speculum. The examination of each woman did not occupy, altogether, more than two minutes. In Brussels the methods were somewhat more careful, but there also they were very far from irreproachable on the score of exactitude. I was also struck with the absence of the serious attention which should always accompany so grave an occasion. At the examination of the brothels, in particular, I noted that the demeanor of the physicians left much to be desired from the point of view of dignity. These observations, it is true, were made more than forty years ago, and matters may now be improved.

On returning from my tour of inspection, I made no delay in seeking an opportunity of applying the knowledge I had just acquired, and I was placed in charge of the examinations at The Hague.

I applied myself courageously to my task, with all the ardor of a young practitioner who sees a new career opening before him, and whose zeal is stimulated by the feeling that an important branch of public hygiene is committed to his care. There was, at that time, no opposition to the application of energetic measures. The authorities had but one object in view, and they had not yet perceived that regulation of prostitution might contain anything contrary to individual liberty. Even minors were subjected to examination. Prostitutes who presented themselves at the place appointed for the purpose were examined under my own eye by an attendant physician. I myself made examinations in the public houses at hours not made known beforehand. The entire person was inspected with the utmost care, and the slightest appearance suggestive of infection was made the subject of investigation.

And what were the results of these examinations, conducted, as they were, with the utmost severity? They were so far from satisfactory that at the end of several years I became convinced that I ought to ask to be relieved from an undertaking which was apparently entirely wanting in the usefulness to the public health expected from it in the beginning. How were these negative results to be explained? By the fact that a medical examination, no matter how carefully conducted, affords no guarantee whatever against contagion. In the course of my unexpected visits to brothels I was obliged to send some two-thirds of the women examined to hospitals, either because they were infected or because they were suspected of being so. And even then I was not secure of the remaining third, although they could not be retired, because it would have been dangerous to empty the public houses of debauch. Moreover, the severe measures which had been taken aroused the whole body of prostitutes to resistance, and I could not make my evening visit to the hospital without a po-

lice escort, so much reason was there to fear that the numerous anonymous threats addressed to me would be put into execution.

It should once more be noted that at this period the contagiousness of syphilis through the blood and secretions of a patient in the condylomatous stage was not yet demonstrated. A knowledge of this fact would have led me to withdraw a much larger number of suspected persons. It is now so well established that I would not be willing to accept the responsibility of giving a clean bill of health to anyone whom I had examined, in ignorance of her previous history. Security can be attained only by isolating the patient and keeping her under observation during a given time.

From all that has been said I feel myself justified in drawing the conclusion that such a thing as a safe public prostitute does not exist.

It may perhaps be urged that although compulsory examination does not withdraw all infected women, it is nevertheless a step in the right direction, for by isolating the more dangerous cases protection is afforded to many who would otherwise be infected. And it is claimed that, although regulation may not succeed in exterminating the evil growth, it at least prevents its multiplication to such an extent as to stifle useful plants. This reasoning has, perhaps, a certain plausibility, but it is of no value here. It is, of course, a fact that the number of men who avail themselves of prostitution increases considerably as soon as the public knows that it is under control. A great many men, who are kept away from brothels by fear of contagion, resort freely to them if this dread is removed, believing that they can profit by such a favorable opportunity with security. I saw clearly, when at The Hague, that the attendance at the public houses increased as soon as the report spread that I was in charge of the examinations. Therefore, the numbers only increased instead of diminishing, in consequence of the elimination of so many unsafe subjects. And yet, in spite of the minuteness with which the examinations were made, a certain number of persons who had remained abstinent up to that time contracted venereal disease.

All contagion which occurs in houses under the control of the authorities is a proof of the inadequacy of the system of sanitary examination; this places the gravest responsibility on those who institute compulsory examinations and those who conduct them.

Statistics have been called in to assist in showing that regulation has reduced the total number of sufferers from venereal disease. This point calls for some comment founded on facts. Speaking generally, statistics are a source of information as to the quantity of disease rather than its quality, and in this particular case the fact is especially true, for the two following reasons:

In the first place, statistics are not without reproach in the matter of nomenclature. The terms under which diseases are classified in statistical statements have no solid basis. A common tumor or a simple herpes which has undergone ulceration may very easily be diagnosed as a soft chancre, if it occurs on a suspicious part of the person. The same thing occurs with neglected erosions or ulcerated lupus. In how many cases of autoinoculation does it not happen that a recent diagnosis is demonstrated as false, although it has appeared in the statistics? How many times has the diagnosis of so-called specific induration characterizing an initial sclerosis been falsified, because the symptoms of constitutional syphilis did not appear within the usual limits? In regard to blennorrhagia also, the statistics are very uncertain. All persons affected with stricture of the urethra preserve during the reminder of life, in differing degrees, an irritability of the part of the canal just behind the stricture. With such patients a little investigation is sufficient to demonstrate a muco-purulent secretion, most frequently slight in amount. Such patients frequently experience a more abundant discharge in consequence of the superexcitation occasioned by coitus, and this is carefully noted as a fresh attack of blennorrhagia. Such blennorrhagias furnish a rich harvest to the compilers of statistics. They are noted under the head of venereal disease, where they produce a vivid impression and exaggerate the importance of the real centers of infection.

It may then be asked: Who are the patients who figure in statistical statements? Only those treated in public establishments and hospitals. The majority, who conceal their ailments, do not enter into statistical reports at all. This dissimulation of disease, which constitutes the principal obstacle to effective treatment, is the reason why no confidence can be placed in figures representing an increase or decrease of contagion.

There is no doubt, however, that medical examinations, even when conducted in a superficial manner, ought always to suppress some centers of infection. When public houses of debauchery are not under control, there will, very likely, be a greater number of infections among their habitués, and it is not impossible that statistics may represent these correctly. But what statistics do not represent is the number of unfortunates who contract disease in places which they are induced to visit through a misplaced confidence inspired by regulation. Statistics are also silent as to the number of persons who do not seek relief at public institutions.

It is, then, an unsettled question whether the victims of insufficient examinations do not rather incline the balance to the other side and really establish that regulation which increases the total number of cases of disease.

Beside the intrinsic difficulties of regulation which I have just enumerated, some attention must be given to the personal qualifications of the men in charge of this department of public hygiene. There is no doubt that they ought to occupy a high position, both morally and intellectually, yet it is only too certain that their social status is not an enviable one. The public in general forgets that they assume the responsibility of a most important service to the public health, and that they are entitled to universal esteem if they acquit themselves creditably of their duties. All these considerations occasion a legitimate doubt whether it is possible to find officials capable of conducting examinations in a conscientious manner; and we may also inquire whether municipalities are accustomed to offer medical men an honorarium sufficiently large to compensate them for the professional loss occasioned by the exercise of their office.

If all these points are taken into consideration, namely, the unavoidable inadequacy of examinations, even if repeated every day, the difficulty of procuring officials competent to conduct them, and the great expense involved in doing so, we are justified in condemning a system which presents so many objections against such extremely problematical advantages.

If it is conceded that the method at present in use is of no value, we must inquire whether there is any other way of preventing the evil done by prostitution to the public health. Assuredly, the abolition of compulsory examination will not in itself attain this end, especially if things are allowed to take their course in other respects. There will always remain a risk of contagion, not only for persons who allow themselves to be seduced by the opportunities afforded in public prostitution, but also for those victims who create such occasions indirectly through their own misconduct. It is necessary to go further and abolish completely the establishment of public resorts for debauchery, as well as all public prostitution. This is the surest means of destroying infectious centers. I am aware that such a proposition is likely to be greeted by loud outcries, so great is the dread of clandestine prostitution, and of the disastrous effects attributed to it on the public health. Clandestine prostitution has always been the great obstacle to the adjustment of this question of regulation. But have the facts been sufficiently examined? Is it really established that clandestine prostitution is as dangerous as it is supposed to be? For my own part I think we are at liberty to doubt. In order to answer the question it is essential to understand exactly what constitutes clandestine prostitution and what objections it presents in comparison with public prostitution.

Clandestine prostitution includes all women who sell themselves for purposes of debauchery, without, however, being at the service of all comers and at all times. For this very reason such a class of persons presents less danger to the public health. The clients, who are known to the prostitutes personally, prefer, for one reason or another, to have intercourse with a single woman, to whom they are often attached. If such a woman contracts disease, the client soon becomes aware of it, and he can protect himself against its extension.

With public prostitution, on the contrary, things are quite different. Women who practice it are at the disposition of every comer at any time; their houses are veritable dens of debauchery, where liquor is employed, as a matter of course, to destroy men's will power and drive them to commit irreparable sins. Lastly, does not observation teach us that venereal patients who present themselves at clinics or at public hospitals have most frequently contracted disease through frequenting public houses of prostitution? It is when they are overcome with liquor that these unfortunates lose all distrust, and do what they bitterly regret when they come to themselves. If there were not so many public temptations many of these men would escape such a fate. I could cite many more facts, taken from my own experience, in support of what I urge, but what I have already said seems to me sufficient to prove

that the suppression of public prostitution would, on the whole, be a benefit to public health.

If we wish to contend with this terrible class of diseases, it is above all necessary that venereal patients should have medical attendance at their disposal. The system in action up to the present time alienates these patients through fear of reprobation or of punishment, while it should, on the contrary, take into consideration only their sufferings and hold itself aloof from the misconduct which has occasioned them. The patient should no longer be withheld from seeking the necessary assistance by unwarrantable restrictions. Measures of relief should be distributed with a liberal hand. By these means positive results will be obtained of infinitely more service than the total uncertainty attending the system now in action, which I do not hesitate to oppose.

AMPUTATIONS BELOW THE KNEE.

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There is little in this subject of technical interest to the surgeon of to-day; it is such an old subject, its technic is so familiar and its performance so simple. Surgeons are looking for greater things, therefore the immediate result is about all they observe and but seldom stop to consider carefully the most important question relative to these amputations, the ultimate usefulness of the stump.

Having been called on three times during the past year to make leg amputations where the Chopart stump was so painful that use was impossible, having also noted the wide differences of opinion among surgeons and also among artificial limb makers, as to the value of these various amputations, I resolved to secure the opinion of the most practical and to compare notes.

I addressed circular letters to 100 surgeons and 35 limb makers, receiving reply from 96 surgeons and all of the latter. The following is a brief summary of these replies:

QUESTIONS ADDRESSED TO ONE HUNDRED SURGEONS.

1. *"Where it is possible, would you advise the Lisfranc amputation or any of its modifications?"*

Twenty-four answered "No," 4 answered "Yes" conditionally, and 63 "Yes," many of the latter indicating a preference for the Hey modification.

Of these amputations 364 were reported to me with sligthly over 20 per cent. reported as "unsatisfactory" and 7 had sought amputation of the leg.

2. *"Where it is possible, would you advise the Chopart, Pirogoff, Symes or any other amputation through the foot?"*

(A) CHOPART: Fifty-seven answered "No," and 34 answered "Providing there is plenty of plantar tissue accessible, Yes."

Of 241 cases reported, over 73 per cent. were reported as "unsatisfactory," and 47 had sought amputations higher up.

(B) PIROGOFF: Sixty-six answered "No," and 22 answered "Yes."

Of 152 cases reported, nearly 61 per cent. were reported "unsatisfactory," and 18 had sought amputation of the leg.

(C) SYMES: Seventy-six answered "No," and only 9 answered "Yes."

Forty-three cases were reported with 9 "unsatisfactory," and 2 of these had sought amputation of the leg.

3. *"Where the foot must come off, where would you elect to amputate?"*

Seven answered "at ankle joint"; 14 "as low as possible"; 9 "three inches above ankle joint"; 16 "just above middle lower third"; 12 "junction of upper with middle third"; and 46 "junction of lower with middle third."

Fifty-eight of these surgeons reported having made over 1,200 amputations, the remainder had no available records.

QUESTIONS ADDRESSED TO THIRTY-FIVE LIMB MAKERS.

1. *"Can artificial appliances be made useful in the Lisfranc amputation of the foot or its modifications?"*

Twenty-six answered "Yes"; 4 answered "They can, but they are not always satisfactory, as patients frequently return complaining of pain and are unable to walk"; while 5 answered positively "No."

2. *"Can artificial appliances be made useful, as to restoration of gait and usefulness of foot in amputations through the foot as in Chopart, Pirogoff, Symes and other methods?"*

(A) CHOPART: Twenty-four answered "No," and 9 answered "Yes."

Many of those answering in the negative gave as their reasons that "Surgeons are not careful enough in making such amputations," and that "the scar is often adherent, not far enough back, and the stump is extended."

(B) PIROGOFF: Five answered "Yes, in selected cases," while 26 answered "No."

(C) SYMES: Twenty-two answered "Yes," and 9 answered "No, except in selected cases."

3. *"If the foot must come off, where should the amputation be made?"*

The universal answer was "from six to nine inches below knee, measuring from lower border of patella."

4. *"What kind of flap makes the best stump for fitting an artificial limb?"*

Nearly all of them answered "Long anterior with short posterior, bringing the scar well back with loose normal skin covering end of bone."

Sad differences of opinion are at once seen. Surgeons differing with each other and limb makers with each other, and the one class differing with the other on many vital points. This is especially noticeable concerning the Symes amputation, where 76 surgeons advise against the operation, with 9 in favor of it, while 21 limb makers favor the resulting stump, to 9 who do not, except in selected cases.

As surgeons, we must recognize the wide experience and ability of our best artificial limb manufacturers. They see the patient many times after we have lost sight of him; in fact, he is forever haunting them with all his misfortune. The question that should engage our serious consideration is: Where and how shall we amputate? considering carefully the future comfort, physical requirements and the possibilities of our patient.

Dr. Fred Murphy of Boston, after making his "Study of Amputations of the Lower Extremity," says: "In going over this subject exhaustively, I found that surgeons themselves had very little idea of the after results in these cases." He also says: "Before my investigation I was enthusiastic as to the value of partial amputations of the foot, but after seeing and talking with the patients I was forced to believe, that as a routine, there is nothing so satisfactory as a good tibial stump of medium length." Again he says: "The makers of artificial limbs tell fine stories about the apparatus that they can fit to these partial amputations, but with very few exceptions they have, in my experience, proved to be most unsatisfactory."

The prevailing complaints among the limb makers against the partial amputations of the foot are "weak supporting arch," "extension of stump," and "insufficient flap and faulty position of scar, which is often adherent and tender."

The old theory of saving all that you can, applied to amputations below the knee, is certainly very absurd, and no intelligent surgeon of to-day would give it even a passing thought.

I believe that no partial amputation of the foot should be made which does not afford sufficient plantar bearing surface to carry the entire weight of the body, with

ample flap to form loose covering over end stump and to bring scar well back out of line of pressure. I believe that an ideal leg amputation is superior to many Chopart or Symes and most Pirogoff amputations. The Lisfranc, especially the Hey modification, gives a very satisfactory stump. I wish to suggest, however, that in making this amputation, it is wise to preserve the attachment of the tibialis anticus, when possible, and if not, to attach its tendons to the plantar flap. This same rule applies also to the peroneus tertius.

In making amputations of the leg, there are a few important details which we should not lose sight of:

1. Be certain of sufficient flap to properly cover end of bone, regardless of how close this may come to the knee joint. Flap must be considered first, length of stump second.

2. The most uniform good results are obtained by making the long anterior with short posterior flap, bringing the scar well away from end of stump.

3. Redundancy is always undesirable.

4. When the length of stump is at the discretion of the operator, it should be from six to nine inches below lower border of patella.

5. Periosteal flap with coaptation of muscles over end of bone is always desirable.

6. Always cut the fibula one inch shorter than the tibia and when the amputation is near the knee joint, disarticulate and remove the fibula.

7. In all these amputations, nerves should be drawn out and cut as short as possible.

THE EVILS OF PROPRIETARY MEDICINES.*

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Many preparations are passed off on our profession by apparently reliable manufacturing houses as ethical proprietary preparations or as definite, synthetical compounds that are not only simple nostrums, but some may be classed as base deceptions. The unsuspicious physician is victimized by these deceptions, is misled by their advertising literature termed "modern therapeutics," and prescribes for his trusting patients these advertised remedies, which are high in price and of whose composition he is either partly or wholly ignorant.

The nostrum evil flourishes more in this country than in any other. To classify the many proprietary preparations, to sift the true from the false, the really ethical from the nostrum, is a difficult matter.

Some medicines are patented, which protects the patentee for seventeen years, but these are not secret, because from the patent office anyone can obtain the description, composition and the method of manufacture. The patent serves simply to increase the cost to the consumer by giving one manufacturer the exclusive right to manufacture the article.

According to the dictionary, a nostrum is "a medicine, the ingredients of which are kept secret for the purpose of restricting profits of sale to the inventor or proprietor; a quack medicine." In this pernicious class are those preparations that are protected by trademark or copyrighted name, and the composition of which is either kept absolutely secret, or there is a pretense of a formula. This secrecy or semi-secrecy is really considered of little moment by the manufacturer, who lays his main stress on expounding the indications for the use of the remedy in a long list of symptoms and ailments which are equally legible to the uneducated and educated in medical matters.

There are two kinds of nostrums and there is no difference between them technically—the secret proprietary preparations manufactured for physicians and advertised lavishly in the medical press, and the common "patent medicines" advertised in the public press. On the one hand the indications for use are couched in medical language, as "Dioviburnia," or "Hayden's Viburnum Compound is the most beneficial remedy known to medical science for dysmenorrhea," etc.; and on the other hand, the wonderful usefulness of the recent marvelous discovery is explained in the language of the public as "Lydia E. Pinkham's Vegetable Compound absolutely cures painful monthly periods and elevates a fallen womb."

The physician abhors the patent medicine evil; yet he reads the literature of the proprietary manufacturers, exploiting their wares, and follows their directions in prescribing to his trusting patients. He is simply being used as a middle-man to distribute these "cure-alls" to the public in general. He is paving the way for ultimate counter-prescribing and ultimate self-medication.

It is difficult to understand why we call medicines and preparations that are advertised in newspapers "patent medicines," and those that are advertised in medical journals "proprietary" or "ethical," when the claims of the two are so much alike and the degree of secrecy equal. The layman can naturally accuse the physician of making a distinction without a difference. Some are so bold and brazen as to make no attempt to tell what the nostrum is, whether it is some real drug or nothing but dirt and syrup. Others make a pretense of giving a formula, with or without amounts. They may give the true formula or simply "a formula" or no formula whatever—not for the benefit of the prescribing physician, but to make the article more easily salable through the medical profession and more profitable to themselves. A favorite and successful method is to give a list of ten or twelve drugs, about two of which are common ones of definite known value that we all use, and the others inert, useless ones with high-sounding and unfamiliar names—the latter serving as a cloak for the formula and giving the impression of some great and potent mixture, "the result of years of medical research." The most dangerous of evils lurk in such deceptions.

A manufacturer of drugs in general and nostrums on the side, as so-called specialties, who uses such methods may justly be the subject of suspicion in all his products. Matters of truth, veracity, honesty and efficiency are of little importance. The sole aim of such manufacturers is to make a product salable and as profitable to themselves as possible. An illustration of their veracity and reliability can be gained by a quotation from THE JOURNAL of the American Medical Association of a recent incident:

> A firm which had been making a proprietary tablet for years had published a certain formula; recently they changed this by adding eight grains of another drug. The pharmacist in question made inquiries of several chemists about this drug and they all assured him that they had never heard of it. He then wrote to the manufacturers of the tablet, asking them if they had changed the ingredients of their preparation, and they made the following reply: "We have not changed the tablet—we only changed the published formula." We wonder how often the opposite is true, that the published formula remains as it was while the ingredients are changed.

* Read before the Eastern Hospital Graduates Club and the Lane County Medical Society.

Most nostrums of any value depend on some common drug familiar to us all and which we could use readily ourselves in prescription compounding, and the unwary physician is captured by the long named extra drugs added, for which wonderful powers are claimed, but which really are inert, or at most, unimportant in their actions.

Let me quote an illustration given by H. C. Wood, Jr.:

Let me call attention to one other example of this effort to confuse the unwary, the simplicity of which is really laughable. A very extensively advertised drug, hailing like other orthodox fakes from St. Louis, is said to be "a palatable preparation of *Panax schinseng*." Panax is the botanical name for the popular Chinese remedy ginseng, whose therapeutic value is about equivalent to that of licorice root. If you want licorice, order extractum glycyrrhizæ.

The bombastic descriptions which the vendors furnish of their strictly original methods of manufacture, dwelling in flights of ambiguous verbosity regarding the special action of enzymes and the special processes of metabolism, etc., of their remarkable products is at once unintelligible and misleading to the general practitioner. Only an expert, conversant in the recent vocabulary of the theories of immunity, etc., can discern the little truth in some of the descriptions and the deceptions of most of them. Meanwhile the vendor revels in the profits of the sale of his wares and laughs in secret—and sometimes openly—at the simple credulity of educated men whom he can so easily dupe.

A Scotchman once said that he had been taught that there were five senses—seeing, smelling, etc., but he knew that there was a "sox sense," called common sense, and many people, both educated and uneducated, do not have it.

In extolling the high characters of their products the manufacturers frequently speak of the thousands of dollars spent in perfecting this or that remarkable remedy. But, we may ask, did they have an opportunity of trying it on patients? The money may have been spent, but the "perfecting" has been the "perfecting" of the business side by the suborning of journals, by printing attractive literature, and by hiring detail men to go around and leave samples and make long "spiels" like a vendor on the Portland Trail or the St. Louis Pike.

The manufacturers of proprietary preparations are banded together in the Proprietary Association of America and have appointed a very active press committee. They realize that it will mean to them the loss of millions if the medical profession and the laity are given the light of publicity on their work and their methods, and, in the case of the former, if each doctor is educated to write his own prescriptions. They have exerted every method of vigilance possible and have endeavored to flank every move that has been made toward publicity. Their subsidized medical journals (and this includes about half the medical journals in this country) have suppressed the exposures of the coal-tar products, as made in the report of the Council on Pharmacy and Chemistry of the American Medical Association, and have been able to bring to bear sufficient influence to induce some of these journals to take their side editorially.

Early last winter an editorial appeared in the *Vermont Monthly Magazine* advocating the use of secret remedies, and this article was widely distributed throughout the country by the nostrum proprietors. And this magazine is the official organ of the Vermont State Medical Society.[1]

1. **Since the above was written, the Vermont Medical Journal has evidently gotten into new hands, and is now standing for better things.**

After the exposures of the composition of phenalgin by the council of the American Medical Association the company manufacturing this article had a two-page advertisement for two issues in the *New York Medical Record* denying the fact that their product was a simple mixture of acetanilid, sodium bicarbonate and ammonium carbonate, as shown by the Council on Pharmacy, and indirectly still claimed it to be a definite synthetic chemical substance, and, furthermore, went on to slur the said council and its work and the American Medical Association in general. THE JOURNAL of the American Medical Association wrote to the editor of the *Medical Record*, calling his attention to these insults in its advertising pages, to which Dr. Thomas L. Stedman, the editor, replied that the editorial pages of his journal and the advertising pages are "separate and distinct."

Through the above report the profession was long ago informed of the composition of ammonol. Yet a few days ago I received samples and the usual literature (which allowance was doubtless sent at the same time to every physician in the country) of ammonol-"stimulant"-"ethical"; "the only antipyretic and analgesic that not only does not depress, but actually sustains the patient." "The administration of ammonol in typhoid is imperative, not merely because it is invaluable to reduce the temperature, but because it is antiseptic and has a decided action on the digestive tract."

Not many physicians would prescribe acetanilid in typhoid, and yet, beguiled by the deceptive description of a nostrum, will prescribe contrary to their own judgment.

According to the advertisement, "salacetin is a combination with heat of salicylic and glacial acetic acids with phenylamine, the irritating, depressing and blood corpuscle destroying elements removed."

According to the committee of the American Medical Association, "Salacetin" is a *mixture* of acetanilid, salicylate of sodium and bicarbonate of sodium. Sal-codeia-Bell (Salacetin-codein), therefore, would be the same as the above with codein added.

This shows that their claims, to the effect that salacetin is a definite compound, are false, and that it is a simple, common, ordinary mixture.

A sample of the similarity between "patent" and "proprietary" medicines may be gleaned from the policy of the company which exploits "Kutnow's Powder." In England it appears to be advertised in the daily papers as peruna is in America, with recommendations of various celebrities, even to physicians. In the United States it is advanced as a "proprietary" medicine and is handed out to the public through the agency of the medical profession. In the English dailies numerous testimonials appear from American doctors, and its claims are just as extravagant as are those of any other extensively advertised "patent medicine." The analysis of it shows it is simply an artificial Carlsbad salts.

Recently an analysis of a cod-liver oil preparation was made by some chemists, who reported on it as follows:

We recently had occasion to open a package of a well-known preparation of "Tasteless Cod Liver Oil." The circular which was wrapped around the bottle was replete with interesting information, especially for the patient, who obtains the preparation in the original package as prescribed by the physician. He finds in it a list of the diseases in which the preparation does wonders; they range from dread consumption to cystitis and hemorrhage of the kidney. Most interesting to us, however, is the statement that the compound "contains all the necessary elements of nutrition." It is too bad to disturb this beautiful vision by a report of the chemist. This shows that the product is quite free from oil or proteids; the only nutri-

tive ingredients are perhaps alcohol, sugar and glycerin. But the claims of the manufacturer are probably correct, because it contains carbon, hydrogen, oxygen and probably a trace of nitrogen—so does gunpowder. Perhaps it will now be the turn of strychnin to be advertised as the ideal food. It seems superfluous to point out the moral of this tale.

The most extravagant claims are made regarding the clay mixtures. The circulars pronounce them practically cure-alls for all ailments from inflammation of the pelvic organs to tuberculosis. Their claims are largely without foundation, and as a poultice they do not come up in efficiency to the common flaxseed meal. The clay is absolutely inert from a therapeutic standpoint. The essential oils and antiseptics are combined in such infinitesimally small proportions as to be of no value. The anhydrous glycerin, as we all know, has a hygroscopic action, and herein lies the small and only virtue of these clay poultices.

Dr. Roth of Ann Arbor has conducted experiments with the clay mixtures in regard to their heat-retaining powers, one of which I will quote herein in detail:

Two one-pound cans were taken, one filled with the clay mixture and the other with flaxseed poultice. Both were heated to 80 degrees C. They were now placed side by side so that all conditions were equal and the temperature taken every hour to determine which gave up its heat the sooner.

	Clay mixture. 80 C.	Flaxseed poultice. 80 C.
After 1 hour	46	58
After 3 hours	21	27.5

The clay mixture gave up its heat in three hours, at the end of that time being at the room temperature of 21 degrees C., while the flaxseed mixture at this time still had a temperature of 27.5 degrees C. It is evident, then, that by means of a flaxseed poultice heat and moisture can be applied for a longer period than by means of the clay mixture, and this fact stamps the flaxseed poultice as more efficient than the clay mixture.

One of the most smooth nostrums and one which on the surface is apparently ethical, but yet which is revealed by analysis to be one of the most rank, advocates (as does peruna) a cure for catarrh (that great catch word) of any part of the body.

There is no pretense of any frankness whatsoever as to its composition. Its price rivals that of holy water, yet the water in it (of which it is composed with a very little glycerin and coloring matter and some of the common, well-known alkaline salts) is only common well or river water, whose only magic is that it comes from New York. Why should we pay a dollar a pound for a nostrum about which we know nothing and prescribe it under a trade name that will soon become common property and indefinitely add riches to the coffers of a shrewd manufacturing company, when we can really compound a superior mixture for the large sum of one and one-half cents? We should not debase our own intelligent prescribing by acting as a middle-man for the sale of some peddler's wares, inferior in quality and exorbitant in price.

By taking nine of those tablets called the "alkaline and antiseptic nasal tablets," made according to the formula of Seiler, and nine drams of glycerin and sixteen ounces of ordinary good water practically the same thing is secured, minus a little coloring matter, which it is really well to omit. The strength of this can be readily and easily increased or decreased by adding or lessening the number of tablets. To make it look sensational one may add some coloring and then cut out a well-known picture and paste it on the bottle; the picture of a lovely lady pouring some of this delightful potion from a gracefully-shaped glass container into the cavity of her aquiline nose.

Another prescription, efficacious, handy and useful, might be written thus (and it can be changed at will to suit the individual requirements of each particular case):

R.	Thymol	gr. i-ii	07-.13
	Sodii bicarb.	ʒss	15
	Sodii salicylat.	ʒii	8
	Sod. biborat. (borat)	ʒiss	45

Sig.: Teaspoonful (more or less as sensitiveness of mucous membrane indicates), dissolve in one-half cup warm water, and use as a nasal douche or throat gargle.

In regard to this "great discovery," physicians will after a time awaken to its nostrum deception and cast it off along the lines I have suggested. But meanwhile the company will have become enriched financially and will have gathered in thousands of testimonials of unwary physicians, and then will begin an ordinary peruna public record with the laity.

In Porto Rico a commission was appointed to investigate the disease known as uncinaria and to report the results of treatment of same. They reported a long series of cases of anemia from uncinariasis and the results of their treatment with three different iron preparations, Blaud's pills, Vallet's mass and Gude's pepto-mangan, the latter being furnished them by the exploiters, M. J. Breitenbach Co. The commission reported that the patients improved the fastest on the Blaud's pills, the next on Vallet's mass, and the slowest improvement was those on whom pepto-mangan was used. In fact, four of the eighteen cases which were treated with pepto-mangan had improved so slowly that they were finally put on Blaud's pills.

The commission informed the pepto-mangan people of the result of their investigations, and yet, in the face of this report, the company published a long article and circulated it among the profession of the country, stating the work of the commission, that they had found pepto-mangan superior to all iron preparations tried, and that this convincing proof should influence all medical men to use this valuable remedy in all of their cases of anemia.

In conclusion, let us consider first the causes of this deplorable condition to which the therapeutic standard of our profession has been lowered by the commercialism and vandalism of selfish "shell game" proprietary manufacturers.

Doctors are only American people, and a scanty, hastily acquired medical education still leaves them Americans, of whom a good judge of human nature once said, "they love to be duped." Their thoughtlessness and lack of therapeutic knowledge make them ready victims for the shrewd and persistent advertising of the master of that wily art, the nostrum man. The deplorable condition referred to is brought about in the first place through the agency of the subsidized medical press, which gives up not only its advertising pages, but half its reading matter for the love of gold, and publishes what the editors must know is false and fakish; by means of attractive literature and alluring testimonials; through the agency of suave detail men with samples and urgent requests to "try our products"—each bunch of samples covering the necessities of most all diseases.

The doctors, too, are at fault; their ignorance of pharmacy and prescription writing is the crux of the matter—we might say their judgment and discernment are deficient. The blame for this may be laid to deficient teaching of therapeutics in the medical college. The mental apathy of the average physician along therapeutic lines, his lack of discernment and blind faith in

the assertions of commercial firms who have something to sell him are some of the greatest causes.

The remedy—it must be directed in two directions. The light of publicity must be cast on this nefarious practice, so that every physician, high and low, can see its details in the full glare of the limelight. And an influence must be exerted on the medical press to discontinue its fake and "patent medicine" advertising.

The better class of physicians in this country are the "doctors in charge of this case." The burden of responsibility rests with them.

PRELIMINARY STEPS IN THE INVESTIGATION OF GASTRIC FUNCTIONS.*

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In making preparations for the investigation of the gastric functions of epileptics, particularly in idiopathic epilepsy, for which the Craig Colony for Epileptics seemed to offer a favorable field, worthy of careful and intelligent investigation, the fact appeared that the methods in vogue were not commensurate to scientific needs, as they do not offer that degree of exactness which would recognize beyond all doubt deviations from the normal, if such were not present in a very marked degree.

So many points have to be considered before conclusions regarding one special point can be made that if accuracy of method and analytic discrimination are not introduced in this field of research, results must necessarily be of such a vague character as not to allow any definite conclusions. This fact impressed the writer particularly in taking up the chemopathology of gastric secretion. It seemed absolutely necessary first to establish standards by means of which the components of the gastric juice could be quantitatively determined.

For the quantitative determination of the acids and acid salts of the gastric contents such standards have been established, but those used by the clinician at large are yet far from being unassailable.

So-called indicators are made use of for the quantitative discrimination, as one might say, of the different acidities. But anyone who studies the question a little, easily perceives how uncertain the discrimination thus obtained really is. To take an example: The quantitative determination of free hydrochloric acid is based on the fact that even slight concentrations of hydrochloric acid assume a dark pink color by the addition of one or two drops of dimethyl-amido-benzol, while solutions of organic acids, in order to produce the same color reaction, have to be present in such concentrations, as they are never found in gastric contents. Granting this to be the case, the problem might be simple enough if either free hydrochloric acid alone or organic acid (using this term in a comprehensive sense) alone were present. But in case of simultaneous presence of the two, the question naturally arises whether or not, and in what way, the organic acid may influence the reaction for the free hydrochloric acid.

Preliminary experiments have shown me that the organic acid undoubtedly does influence the reaction, if present in considerable quantity. It makes it much less definite, so that instead of a sudden reversal of color, taking place at the moment of neutralization, we obtain a very gradual change of color which makes it impossible to define when neutralization has occurred. What will take place if only small quantities of the organic acids are present, and whether in such a case the result of titration by an alkali—with dimethyl-amido-azo-benzol as an indicator—will denote solely the acidity due to the free hydrochloric acid; or whether, on the contrary, it will indicate the sum of the acidities of the free hydrochloric and the organic acids, I have not investigated yet; but certainly this point needs elucidation and it is peculiar that more attention has not been paid to it.

Greater still are the difficulties to contend against when we attempt to determine the amount of pepsin present in the stomach contents. There are, to my knowledge, no chemical reactions by which this can be done, except by testing the digestive power of the gastric contents. We know, however, that the digestive faculty of pepsin unfolds itself only in the presence of hydrochloric or some other acid and that this acid must have a given concentration, varying for different foodstuffs, in order to develop the digestive power of the pepsin at its best.

Aside from others, three conditions, therefore, seem to be required for accurate tests:

1. A pepsin solution of standard strength for control tests.

2. Acidification of this pepsin solution by hydrochloric acid in definite proportion.

3. Bringing the hydrochloric acid percentage of the stomach contents under examination up or down to the same, or approximately the same, strength as that of the control mixture.

The control mixture of pepsin and hydrochloric acid must be made fresh before use, as the pepsin soon deteriorates in solution.

A further difficulty is that of always obtaining a pepsin of the same composition. This, I understand, is practically impossible, so that even the most reliable products or brands of this ferment are subject to some variation. Therefore the only way that seems open is to begin with a definite brand of pepsin, combine it with hydrochloric acid of definite strength, and test the digestive power of this control digestive fluid on albumin and eventually on casein, meat, gelatin and other foodstuffs. To do this successfully, i. e., to obtain reliable results, the foodstuffs mentioned will have to be standardized. One attribute of this standardization will have to be homogeneousness of the foodstuff to be used as a standard. The white of an egg, for instance, shows such differences of density in its different parts that only a thorough redistribution would seem to make it fit for tests. The method I adopted for this purpose was to dry the white of an egg, pound it to a fine powder, redissolve it in distilled water, and either filter or centrifuge it. The latter process is quicker and more simple. After about five minutes' action of a water centrifuge, the redissolved white of egg is found to show three layers, one narrow upper foamy zone, one wide middle layer of clear fluid free of air bubbles, and a considerably less wide zone of sediment. Only the middle layer of clear fluid is used, by drawing it off with a pipette. Measurement of the volume of the unaltered, i. e., original, white of egg, and weighing of the same after drying, showed that the white of egg represents a solution of the dry albumin of about 12 per cent. strength. Such an artificial or disorganized white of egg of the same strength as the natural white of

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egg, if prepared by using only the clear zone in the centrifuge fluid, showed some interesting physical qualities. On being coagulated by heat, it assumed a beautiful opalescence, being quite transparent in thin layers and of a jelly-like consistency. Of another peculiarity of such an albumin I shall have opportunity to speak later.

Having thus established a homogeneous test material as demonstrated for egg albumin, the next step is to test its relative quality by digestion tests. Practically the problem might be accomplished in the following manner: Note is taken of the particular "lot" of pepsin used for the control digestive fluid and also of the particular "lot" of albumin used in the control test. The first bottle of the dry pepsin used, be it an ounce or a quarter of a pound or another quantity, is called, Pepsin, Lot 1. A small amount of this is mixed with hydrochloric acid and water in the proportions found most suitable for the control digestive fluid. The digestive power of the latter is then tested on egg albumin Lot 1 dissolved in water in such or such percentage. By Dried White of Egg, Lot 1, is designated all the white of egg dried on a given date, say April 1, 1905, pulverized and well shaken, so as to give a uniform composition of the entire quantity dried at the time. The next lot prepared, say June 3, is designated as Dried White of Egg, Lot 2.

By testing pepsin, Lot 1, on white of egg, Lot 1, and then on white of egg, Lot 2, the following important result will be reached: 1. Either the digestive result is the same, i. e., the control digestive fluid prepared with pepsin, Lot 1, digests under equal conditions the same quantity of dried white of egg, Lot 2. This would be the most desirable outcome, as then the two lots of dried white of egg can be used indiscriminately for all digestion tests. 2. Or the digested quantities of the two white of egg lots are not the same. In the latter case the difference may be one of density only, or one of composition. If of composition, the problem would become a complicated one; but if, on the other hand, the difference was one of density only, the establishment of certain digestion laws may help us out.

If we study the effect of a given control digestive fluid, say on a 16 per cent. solution of dried white of egg and then again on solutions of the same white of egg but of a different percentage, the digestive effect obtained on these different concentrations ought to enable us to discover the laws which govern the digestive effect on the different concentrations of albumin; and the knowledge of such a law would, vice versa, enable us to infer the concentration of the dried white of egg from the digestive effect. In this manner, by mathematical calculation, the digestive effect of pepsin Lot 1 on white of egg Lot 2 could be substituted by the digestive effect of pepsin Lot 1 on white of egg Lot 1, or vice versa.

The next problem arising from this is a comparison of pepsin, Lots 2, 3, 4, etc., with pepsin Lot 1. This comparison has to occur through the intermediary of digestive tests on the white of egg lots; and proper interpretation of the ventual differences in the digestive powers of these various pepsins necessitates again the knowledge of physical laws. This certainly makes the problem a very complex one. But, as already mentioned, it is practically impossible to manufacture a pepsin of always uniform composition and digestive power. We have, therefore, practically no means of quantitatively determining the pepsin except by digestive tests, which again makes the study of the laws above discussed very desirable, if not imperative. Encouraged by some results to be reported below, I intend taking up this study.

Our troubles, however, do not end here. In beginning digestion tests with pepsin on albumin, the selection of a reliable method presented itself. The choice finally fell on one promising the greatest accuracy. It was the method long in use by the school of Pawlow, and introduced, so far as I understand, by Dr. Mett, one of Pawlow's pupils. The principle of it is to fill glass tubes of an inner caliber of from 1 to 2 mm. with albumin from the white of egg and coagulating this albumin by heat. Tubes thus prepared, of a length of from 2 to 3 cm. or as much longer as may be desirable under given circumstances, are put into the digestive fluid to be tested and subjected to its action for ten hours at a temperature, preferably of 37 C. The length of the digested column is then read off by means of a scale.[1] The tubes are known under the name of Mett tubes, which name, for brevity, shall be made use of in this paper.

Pawlow's school was fully aware of the necessity of establishing the law governing the length of the digested column before the result of the tests could be utilized. It was, indeed, discovered by these authors and sounds as follows:[2]

The digestive powers of the juices tested are in direct proportion to the squares of the distances digested by them.

Pawlow and his pupils further found that the digestion of the albumin in the tubes progressed at a regular rate, so that the distance digested in the first hour in the incubator is just as long as that digested in the second hour, etc. This makes the method of the Mett tubes a very accurate one, if properly applied. The *sine qua non* conditions for its accurate workings are homogeneousness of the albumin, absence of air bubbles, and even coagulation and close contact of the coagulated albumin with the wall of the tube.

The first two points offered considerable obstacles. The drying and pulverizing of the white of egg, however, removed the first obstacle, securing the desired homogeneousness, while the centrifuge disposed of the second one—the air bubbles—very effectively in a few minutes, so that it became unnecessary to clear the dissolved albumin of air bubbles by standing, a method which, in view of the risk of decomposition, would be very objectionable. However, new gas bubbles may arise during the coagulation by heat from evaporation of the water of the albumin solution, if the heating is continued too long.

The third condition, even coagulation, is rather easily obtainable. Test tubes are stocked with empty Mett tubes 2 to 3 to 5 cm. long. Then the albumin is allowed to flow into the test tube while slanting the latter. Subsequently the test tube, firmly stoppered, is immersed in boiling water on a slight slant, preferably resting it on a layer of absorbent cotton so as to prevent too much heat communicating itself from the bottom. After the entire mass has turned opalescent white, it is good to leave it in for about a minute longer. By

1. I used the following means of measurement: A scale was drawn, the units of which were 2½ mm. This scale was photographed with a reduction to 1/10. From the negative a positive was taken and the scale contained on the latter was covered with a microscopic cover glass, fastened to it by means of xyloldamar. The scale thus obtained had ¼ mm. for units, which, by means of a dissection microscope, could easily be read off. Indeed, even 1/8 mm. could be measured.

2. If I have not rendered the exact wording of the law, I feel certain that the sense is as here given.

leaving it in too long, one risks the formation of steam bubbles by evaporation of the water of the albumin solution.

The fourth point, close contact of the coagulum to the tubes, may be obtained by washing and, of course, drying, the Mett tubes well before use. A shrinkage of the coagulum from the wall can thus be avoided with albumin solution of the strength of a natural white of egg. In using weaker concentrations a retraction was to be feared. My experience has been, however, that with all the concentrations that could be made to coagulate in one mass, no retraction took place. If, however, casein was used instead of white of egg, i. e., if milk was made to curdle by adding rennin, the coagulum formed retracted to a thin thread.

The next step is to cut the Mett tubes out, making the cuts as sharp as possible at the ends. They are then preserved in vaselin which, although somewhat disagreeable to handle, effectively prevents evaporation and apparently also decomposition of the albumin.

After obviating thus the difficulties enumerated, additional evidence of the reliability, i. e., homogeneousness of the test material, can be obtained by placing the Mett tubes horizontally in the digestive fluid used for the test. If the coagulated albumin is homogeneous, the digestion will take place at both ends at exactly the same rate.

CONCENTRATION OF THE TEST MATERIAL TO BE DIGESTED.

Next in order of consideration is the concentration of the test material on which the digestive powers of the artificial control juice or actual juice are used. It has been mentioned that in the original, i. e., natural, white of egg, the albumin or albuminous substances are present in a solution about 12 per cent. strong. It would, therefore, seem most natural to conduct the digestion tests with a 12 per cent. solution of the dried white of egg. Indeed, Pawlow and his pupils, if I am rightly informed, have used the natural white of egg altogether. But we must not forget that their digestion tests were made with pure juice, as is the case in clinical tests. While, therefore, owing to the high concentration of the juice, the digested column in their experiments was long, reaching in some instances the length of 8½ mm. in ten hours at body temperature, the figures obtained by myself with human gastric juice within twenty-four hours, also at body temperature, were 4 to 5 mm. only, or thereabouts. With such small figures it seemed hopeless to obtain accurate comparisons, and it seemed imperative to dilute the albumin to such a degree that the figures would be large enough to show deviations from the normal.

To what extent this may prove feasible, I can not say as yet. For the present, the fact is to be registered that an 8 per cent. concentration of the dried albumin can still be made to coagulate by heat, while a 6 per cent. solution remains liquid no matter how long heated; so that by this fact a limit is put to further successful dilution, if not otherwise modified. However, an 8 per cent. solution is so much more quickly digested than a 12 per cent. solution that the hope of its furnishing a test material complying with scientific requirements seems justified. But a proper utilization of the results of tests applied to the diluted 8 per cent. white of egg can be attained only by knowledge of the digestion law above mentioned, i. e., the law governing the digestion of different concentrations or densities of one and the same substance. The necessity of the knowledge of such a law applies also to other foodstuffs, such as starch, casein, gelatin, etc.

But, as already pointed out, casein, even if undiluted, does not fulfill the requirements of the successful application of the Mett tube method for digestion tests, since even in the undiluted milk the curdle formed by the action of rennin shrinks away from the wall of the Mett tube. Similarly starch, if in too weak concentration, does not solidify by heat; and in concentrations in which it is well solidified by heat, the digestion by saliva or even by strong diastase of malt, is so slow that one has again to contend with the objectionable feature of small figures which make it impossible to register slight deviations from the normal.

To obviate this obstacle, the idea occurred of distributing the test material over a carrier or vehicle, to which it is to be added in a liquid state, and then allow it to become solid by heat or other coagulating procedures—such as rennin for casein—allowing subsequently the carriers to become solid by cooling. The requirements that have to be put to such a vehicle are that it permit free penetration, that it be not digested, or very slowly digested, much slower than the test material carried by it, and that in such case the rate of its digestion be exactly known. The outcome of my study of the penetration laws thus necessitated is here given.

PENETRATION LAWS.

After having first selected a substance which seemed suitable for a vehicle, penetration experiments were first made with this substance without at first using it as a carrier for material that was to be digested. The choice fell on agar as a medium to be penetrated, but coagulated albumin was used also in the same rôle for some of the experiments. The penetrating fluid selected as a first choice was, naturally, hydrochloric acid, in view of its being a normal constituent of the gastric juice.

I shall first enumerate the laws so far established for the penetration of hydrochloric acid with relation to agar and then relate how they were found. To what extent they may prove applicable also to other penetrating substances and to other media to be penetrated, I am not prepared to say. But in a number of experiments the first-named law was found to hold true also for the penetration of hydrochloric acid (in solution of 2 per mille.) through homogeneous coagulated egg albumin.

1. The velocity of penetration is in direct proportion to the square of the distances penetrated. This law may eventually find its limitations by high or very low concentration of the acid, perhaps also of the agar. It so far was found to hold true for concentrations of from ⅛ per mille. to 8 per mille. of hydrochloric acid and of from ½ to 2 per cent. of the agar.

2. The concentration of the agar within the limits so far investigated has a relatively very slight[3] influence on the velocity of penetration. A 2 per cent. agar is almost as quickly penetrated as a ½ per cent. agar.

3. Within certain limits the square roots of the concentrations of the penetrating hydrochloric acid (also of other acids?) are in direct proportion to the squares of the distances penetrated by them in the same time. To concentrations above 3 or 4 per mille, and possibly below ⅛ per mille, of the acid this law does not apply.

3. Very slight. In a former publication on "The Feasibility and Value of Accurate Methods in Clinical Investigations," Monthly Cyclopedia of Practical Medicine, vol. viii, p. 289, I had stated that the concentration of the agar within certain limits had no influence on the velocity of penetration. Further experiments with longer exposure, i. e., greater time periods, and correspondingly larger figures, have forced me slightly to modify the statement as above.

METHODS BY WHICH THE PENETRATION LAWS WERE ESTABLISHED.

It may be of some interest to give the evolution of the methods which led to the discovery of the laws above defined.

The fundamental fact had first to be established whether the fluids penetrated to any depth and in a reasonable time in the medium to be penetrated. For this purpose one of the reactions used for the determination of hydrochloric acid in gastric analysis was utilized, the dimethyl-amido-azo-benzol. Solutions of this compound, if made acid by hydrochloric acid, assume a deep pink color; if neutral or alkaline, a canary yellow, or (if stronger solutions of the dimethyl-amido-azo-benzol are used), orange color. The following experiment was first made:

A small grain of dimethyl-amido-azo-benzol powder was dipped into a thick celloidin solution and then fished out again with the celloidin surrounding it. This celloidin coating was allowed to dry, and the pearl thus formed was dipped into a weak solution of hydrochloric acid. The orange-colored coating at once turned pink. A new pearl was then made and inserted into a glass tube 3 cm. long and of an inner diameter of 2 mm. This glass tube was then put into a dish filled with 2 per cent. melted agar, allowing the latter to stream in, taking care to leave the pearl in position about the middle of the tube. Subsequently the agar was allowed to cool off until solid, and the glass tube was cut out of the solid agar mass and put into a solution of hydrochloric acid of about the concentration in which it is present in the normal gastric juice after an Ewald-Boas test meal, viz., approximately 2 per mille. After about an hour the hitherto orange-yellow coating of the pearl turned pink. The experiment was very instructive and convincing, but its inadequacy for finer measurements was apparent. It was therefore modified, as follows:

A few grains of dimethyl-amido-azo-benzol were dissolved in thick celloidin in a mortar, giving the celloidin an orange color. A glass rod was then dipped into this mass of molasses-like consistency, and by taking it out again, a celloidin thread was drawn. The rod was kept quiet until the thread was dry, and the latter was then severed off and cut into minute chips. These chips when put into hydrochloric acid solution gave the dimethyl-amido-azo-benzol reaction in a striking manner. The penetration experiment was now repeated. Instead of the pearl two chips were used, one being placed near the center of the agar-filled glass tube, the other about midway between it and the end. The reaction was seen to appear first in that part of the distal chip nearest the end of the tube. It was sharp enough to allow even after the second or third experiment the formulation of the law first enumerated, viz., that the velocity of penetration is proportionate to the square of the distances penetrated. But the figures were still somewhat too inaccurate; and the method had the great inconvenience that one had to sit right by and watch until the reaction appeared, and was unable to do anything else in the meantime. Moreover, the exact moment of the appearance of the reaction was hard to determine, as the transition from orange to pink was not sudden.

Another experiment was now made. Two drops of a 1 per cent. aqueous alizarine solution, as used for the determination of the total acidity minus combined hydrochloric acid in gastric analysis, were added to 10 c.c. of a melted ¾ per cent. agar solution, after the latter had been made slightly alkaline by five drops of a 1/20 per cent. solution of sodium hydrate. The agar assumed now a purple color.

Glass tubes of an inner diameter of 2 mm. of different lengths were then placed in the agar solution, taking care to let them fill up without air bubbles. After the agar mass had become solid by cooling, the glass tubes were cut out of it. They were then placed in weak hydrochloric acid solution, the penetration of which showed very prettily by the transformation of purple into a yellow color at the ends. The yellow columns extended further and further toward the center, until after a certain time they met, the entire agar column having become yellow. The line of demarcation between the purple and yellow zones was very sharp, allowing measurements even of ⅛ mm. by means of a scale (described in a former paragraph) divided into ¼ mm., which had been fixed photographically on a glass plate and was read off with a dissection microscope.

These alizarine agar tubes, one of which, under the action of about 2 per mille. hydrochloric acid, is illustrated in Figure 1, made the experiment much easier and more accurate, and the conditions of the experiment were much more under the control of the experimenter. It was made possible to eliminate the influence of inequalities of the temperature by placing all tubes in the incubator, and maintaining an even temperature (37 C.) throughout the experiment. The tubes could be taken out after definite intervals and the distances penetrated measured. The more minutely all precautions were observed, the more closely did the actual

Fig. 1.—Illustrating an alizarine-agar tube under the action of hydrochloric acid approximately 2 per mille strong. It shows in the center the dark neutral zone, and at each end a pale acidified portion the length of which indicates how far the hydrochloric acid has penetrated. The color of the dark zone is purple, that of the pale portions yellow.

results agree with the results gained by calculation, thus confirming more and more strongly the law formulated. Here is an example:

First distance penetrated: 9 mm. Time required for penetration 120 minutes.
Second distance penetrated: 14 mm. Time required for penetration, 300 minutes.

In substituting x for the time required to penetrate the second distance (14 mm.), and calculating it according to the formulated law, this equation is obtained:

Square of 1st distance.	Square of 2d distance.	Penetration time for 1st distance.	Penetration time for 2d distance.
$(9\text{ mm.})^2$:	$(14\text{mm.})^2$ ::	120 minutes. :	x

$$x = \frac{14^2 \times 120}{9^2} = \frac{196 \times 120}{81} = 290 \text{ minutes.}$$

In other words, the actual time was 300 minutes; the calculated time 290 minutes, i. e., an error no greater than 3 1-3 per cent.

Another instance:

Square of 1st distance penetrated.	Square of 2d distance penetrated.	Penetration time of 1st distance	Penetration time of 2d distance.
$(5\text{ mm.})^2$:	$(7\text{mm.})^2$ ::	40 minutes. :	x

$$x = \frac{7^2 \times 40}{5^2} = \frac{49 \times 40}{25} = 39.2 \text{ minutes.}$$

The actual time was 40 minutes; therefore, error for 40 minutes was 4/5 of a minute, or 2 per cent.

To multiply these examples would be useless.

Here is an instance showing the validity of the second law, viz.: That within the limits so far investigated the concentration of the medium to be penetrated

has a relatively very slight influence on the velocity of penetration. The figures are given for both ends of the tubes, showing how closely the distances at each end tally with each other:

	Distance penetrated within 240 minutes by 8 per mille hydrochloric acid. At one end.	At the other end.
Through 4 % agar	27 mm.	27¾ mm.
Through 2 % agar	28¼ mm.	28½ mm.
Through 1 % agar	29⅝ mm.	30¼ mm.
Through ½ % agar	32 mm.	32½ mm.
Through ¼ % agar	35½ mm.	Not measured.

Previous experiments had been made by me with considerably shorter times of exposure to the acid, giving correspondingly smaller figures. This explains my former statement[4] that the concentration of the agar has no influence on the velocity of penetration, in support of which statement, now slightly modified, the following figures had been adduced for the penetration of about 2 per mille hydrochloric acid:

	Distance penetrated within 20 minutes. At one end.	At the other end.	Distance penetrated within 40 minutes. At one end.	At the other end.
Through 1 % agar	7¼ mm.	7½ mm.	10½ mm.	10¾ mm.
Through ¾ % agar	7¼ mm.	7¾ mm.	10½ mm.	10¾ mm.
Through ½ % agar	7¼ mm.	7½ mm.	10¼ mm.	10¾ mm.

This surprising second law will prove of practical value, as it will not be necessary to be very particular in the preparation of given concentrations of agar for carrier purposes.

Of great interest and eventual practical application is the third law: Within certain limits of concentrations which have been discussed in a former paragraph and which are the most important ones for gastric work; the square roots of the concentrations of the penetrating fluid are in direct proportion to the squares of the distances penetrated.

	Distance penetrated after 215 minutes. At one end.	At the other end.
Fluid 1 = Hydrochloric acid approximately 2 per mille[5]	27½ mm.	27½ mm.
Fluid 2 = 1/16 strength[6] of Fluid 1	14 mm.	14 mm.

Equation:

Square root of concentration of Fluid 1.	Square root of concentration of Fluid 2.	Square of distance penetrated by Fluid 1.		Square of distance penetrated by Fluid 2.
$\sqrt{1}$	$\sqrt{1/16}$	:: x^2	:	$(14\text{ mm.})^2$

$$1 : \tfrac{1}{4} = x^2 : 14^2$$

$$x^2 = \frac{14^2 \times 1}{\tfrac{1}{4}} = \frac{196}{\tfrac{1}{4}} = 196 \times 4 = 784$$

$$x = \sqrt{784} = 28$$

In other words, calculated penetrated distance = 28 mm.—real penetrated distance = 27½ mm., or an error of ½ against 28, or of 1.8 per cent.

This third law, governing the velocity of penetration according to concentration, may find a practical application. The distance penetrated in a given time corresponds always to a definite concentration of a given acid (eventually also of other fluids). The method could therefore be used as a substitute of titration. To make it practical, a table could be compiled, giving for a given time, say two hours, on one side all the penetration distances from 0 to 50 mm.;[7] on the other side the concentration of a given acid corresponding to these distances. The limitation of the law may prove some obstacle to the successful working out of the method for acidities above 3 or 4 per mille. or below ⅛ per mille. It seems, however, that even this obstacle may eventually be overcome.

For the determination of the free hydrochloric acid by this method congo red proved to be a very good indicator, giving a sharp line of demarcation and sharp contrast between the neutral red and the acidified blue portion. It is in this respect vastly superior to the dimethyl-amido-azo- benzol, in which the transition from the neutral yellow to the acidified pink portion is a gradual, hazy one. Congo red agar tubes have, unfortunately, one disadvantage, however, that of becoming deteriorated in a few days; the beautiful, clear red changes into a dirty brownish or reddish precipitate. The sharpness of the line of demarcation for the alizarine agar has already been pointed out. The alizarine agar tubes keep well for months.

As an indicator for total acidity, I have made a few experiments with phenolphthalein agar, and it seems to fill requirements well, giving a fairly sharp demarcation line, although not as sharp as the alizarine and Congo red.

Therefore, in view of the applicability of the phenolphthalein and alizarine tests, we have the means to determine by this method also the combined hydrochloric acid quantitatively, and it may eventually be entirely substituted for titration of the different acidities of the stomach. It would have the advantage over titration of taking much less time, since the agar tube for a given acidity needs no further manipulation than putting it into the gastric fluid to be tested and reading off the result, after it has been left in the incubator for the required period of time. The tedious process of anxious watching of the point of neutralization incident on titration is thus avoided and, furthermore, all three acidities can be read off at the same time, since a Congo-red, an alizarine and a phenolphthalein tube can be subjected to the test at the same time and read off at the same time.

Many of the details of this method still need working out and eventually modifying, and I reserve a more detailed account for a future publication.

The formulas which so far have given most satisfaction are:

Congo-red tubes:

1 per cent. aqueous solution of Congo red.....gtt. x
1 per cent. agar, hot, thoroughly liquid..... ad 3iiss

Alizarine tubes:

1 per cent. aqueous solution of alizarine.....gtt. ii
1 per cent. agar, hot, thoroughly liquid.....3iiss
1/10 per cent. aqueous sodium hydrate solution..gtt. ii-v
i. e., until mixture has a purple color.

As already mentioned, the Congo-red agar tubes keep only a few days, the alizarine tubes several months.

Before concluding this paper I wish to report on some interesting results of experiments made with 8 per cent. white of egg solution prepared in the manner described. This albumin solution was again filled into Mett tubes in the manner above described and coagulated in these by heat. The tubes were subsequently subjected at body temperature to an artificial gastric juice composed as follows:

Pepsin (Merck).....grs. ii
Two per cent. hydrochloric acid (this concentration was determined by titration).....½ c.c.
Distilled water.....5 c.c.

A narrow white disc was soon seen to appear near either end of the tube, respectively, moving gradually toward the middle of the tube, but not increasing in

4. Monthly Cyclopedia of Practical Medicine, vol. viii. p. 289; "The Feasibility and Value of Accurate Methods in Clinical Investigations."

5. Two per cent. hydrochloric acid ½ c.c.; distilled water 5 c.c.

6. Diluted with enough distilled water to make it 1/16 the strength of fluid I.

7. For instance, in ¼ of a mm., i. e., ¼, ½, ¾, 1, 1¼, 1½, 1¾, 2 mm., etc.

its width, which was about ¼ mm. It is shown in a photographic reproduction in Figure 2, where it appears black instead of white. It was found that this zone moved with a velocity corresponding to law No. 1. After having reached the center and amalgamated with its opposite, it disappeared.

To find out to which of the constituents of the artificial juice this phenomenon was due, or whether it was due to both, the following experiment was made:

One tube was put into the artificial juice above described. Another tube was put into

Two per cent. hydrochloric acid	½ c.c.
Distilled water	5 c.c.

or, in other words, into the same fluid minus the pepsin.

Fig. 2.—Drawing reproduced from photograph of albumin tube, showing the demarcation line produced by the advancing hydrochloric acid. This line, while appearing white in the tube against the transparent other albumin, shows in the photograph as a dark line.

Both tubes were put into their respective fluids at the same time, and the effect was watched. It proved that both tubes showed the disc, and that it moved with exactly the same velocity in both, showing thus that this demarcation line was purely due to the influence of the hydrochloric acid, since I may add that distilled water alone did not produce such a line.

Here are the figures illustrating the results:

	Experiment with the fluid containing the hydrochloric acid plus pepsin.		Experiment with the fluid containing the hydrochloric acid alone.	
	At one end.	At the other end.	At one end.	At the other end.
1. After 31 minutes..	2⅝ mm.	2⅝ mm.	2½ mm.	2⅝ mm.
2. After 62 minutes..	3¾ mm.	3¾ mm.	3½ mm.	3¾ mm.
3. After 124 minutes..	5⅜ mm.	5⅜ mm.	5⅛ mm.	5⅜ mm.

In testing here again the validity of the first penetration law by calculating the penetration time of distance 5⅜ mm. from penetration time 62 minutes and penetration distance of 3¾ mm., the following result is obtained:

Square of 2d distance penetrated.	Square of 3d distance penetrated.	Penetration time for 2d distance.	Penetration time for 3d distance.
$(3\frac{3}{4}\text{ mm.})^2$:	$(5\frac{3}{8}\text{ mm.})^2$ ::	62 minutes. :	x

$$x = \frac{(5\frac{3}{8})^2 \times 62}{(3\frac{3}{4})^2} = \frac{28.89 \times 62}{14.06} = \frac{1791.18}{14.06} = 127 \text{ minutes,}$$

instead of 124 minutes actual time. Error = 3 : 127, or 2.28 %.

To what use the observations just reported may be put it is difficult to say, although there seems a prospect of utilizing them for establishing landmarks in the digestion tests.

In conclusion, I take occasion to correct a statement made by me in a contribution treating partly on the same subject and published in the *Monthly Cyclopedia of Practical Medicine*, vol. viii, p. 289, in the form of an editorial bearing the title: "The Feasibility and Value of Accurate Methods in Clinical Investigations." The statement referred to was the one that coagulated disorganized egg albumin is digested not only by pepsin plus hydrochloric acid, but even by hydrochloric acid alone of 2 per mille. strength. Control experiments have made it very probable, if not certain, that this statement was wrong, evidently the result of some error of labeling. I corrected it in the proof of said editorial, but the proof reached the publishers so late that this and some other corrections could not be inserted.

PNEUMONIA.*

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CANANEA, SONORA, MEXICO.

A generous experience in the management of pneumonia during the last two years has given me an opportunity to offer some suggestions concerning its treatment that merit consideration. As my efforts and success in the treatment of this disease are based on my personal observations, many statements may appear dogmatic. My object is to give a synopsis of the details and indications that should be observed in applying my method of treatment rather than any speculative or theoretic views that would occasion a new engagement on the old battle ground of medicine.

Pneumonia is a septic febrile disease characterized by an early inflammatory attack on the lung tissue and frequently followed (by the actions of its toxins) by complications that mechanically interfere with the function of the heart and chemically change the condition of the blood to such an extent that even those who are fortified by unusual vigor frequently perish. Its etiology is the presence or absorption of pyogenic germs, whose rapid development is produced by a propagating bed due to the influence of a sudden reduction in surface temperature, in which reduction alcohol, cold and wet weather are frequent factors.

To my mind, the prevalence of pneumonia and its increasing mortality brand it as one of the foremost diseases for our professional consideration. While differing from nearly every writer on pneumonia, I do not wish it understood that I look on their efforts as unavailing, as I fully appreciate their honorable efforts in lending valuable aid in divers ways. I must, however, take issue with those who recommend expectant measures as the principle of treatment, and state that physicians are powerless to modify or to lessen the course of this formidable disease by any therapeutic agent.

In my treatment the antitoxin effect is first noticed in the pulse. If the treatment is properly administered, a favorable circulation can invariably be maintained throughout the convalescing period. Following the improvement in the pulse, the temperature begins to drop; respiration improves, as well as the cyanotic condition which is frequently noticed, especially in neglected cases, in which alcoholic stimulation has masked the invasion of the pneumonic process by its anesthetic influence. Dr. Charles F. Neider,[1] of Geneva, N. Y., mentions what I have so frequently demonstrated, in the following quotation: "Instead of a high-tension pulse, which is usually present in pneumonia, the pulse was of nearly normal tension and of good value. When there was cyanosis, it was promptly relieved."

I am satisfied that our continued, as well as our primary efforts, should be directed to applying measures that will fortify the heart and destroy micro-organisms and their products that produce sepsis. To treat pneumonia as a localized inflammation or as a functional disturbance, without considering the dangerous sequelæ that are sure to follow, is about as rational and logical as it is to advise expectant measures. The keynote and foundation of the principles that commend my treatment is the fact that it prevents the manifestation of

* With the exception of the valuable clinical reports of Drs. Gustetter, Carpenter, Butzow, Haney and Dudley, the basis of this article consists of extracts from a lecture recently delivered at the New York Polyclinic by request of Professor Beal.

1. THE JOURNAL A. M. A., Nov. 18, 1905.

septicemia. The success which I have obtained by having the courage of my convictions, in what may be looked on as a formidable practice, was not without its anxious hours, and well can I appreciate a physician's anxiety after he has given the first sixty- or seventy-grain dose of quinin; but if there is a medicine in existence that will secure specific results I believe that it is quinin and iron properly administered in pneumonia. No medicine or antitoxin, in my experience or observation, has secured the phenomenal results that I have had in the treatment of pneumonia. I consider the use of stimulants (alcohol, strychnin, etc.) during the active stage of pneumonia not only contraindicated, but dangerous. By increasing the heart's action during its overtaxed period, when handicapped by the toxic condition of the blood that it is to distribute, the mechanical conditions that are distressing the patient are increased.

I earnestly solicit an honorable expression from those who choose to practice my method. Scores of physicians throughout the country have suggested the possibility of so many etiologic factors that I accept this opportunity of answering the many inquiries by simply stating that the etiology in this locality is no doubt the same as elsewhere and we have the same typical lobar pneumonia. Those who are not acquainted with the pneumonia that is found in all high altitudes we envy for the mildness of their cases. A careful review of the clinical reports which my colleagues have herewith submitted substantiates my claim that quinin will not depress the heart during the active stage of pneumonia; on the contrary, it is the most reliable stimulant and produces the effect that we have looked for in other remedies in vain.

Quinin, as I administer it, will not only reduce the frequency of the heart, but will increase its volume and the peripheral circulation as well. To prove its indication, I can positively state that in not a single instance in which large doses have been administered during the active stage of the disease has cinchonism been observed. With the exception of a slight ringing in the ears in two or three cases only, not an unfavorable symptom has ever been reported from its direct or remote influence.

From a scientific standpoint, I regard the achievement in preventing pneumonic cardiectasis, commonly called crisis, with greater favor than I do the recovery. Moreover, what proof (outside of a personal experience) is lacking to prove that my method of treating pneumonia is worthy of consideration? Compare the reports of my colleagues, who have treated cases according to my method, with the reports of those who have adopted the expectant plan. Note the absence of those alarming conditions that occur with due regularity during the sixth, seventh and eighth days of the disease. Note the absence of pain and the comfort the patient experiences within twenty-four hours after the initial dose of quinin and iron. So seldom do my patients complain of pain that I am safe in stating that I have not administered any anodyne for nervousness or pain, except in three or four out of the last hundred cases. Note the reduction of mortality from 75 per cent. to less than 2 per cent. Note the early resolution and infrequent complications.

Do not for an instant entertain the belief that I have overdrawn my picture, for the former mortality in the great majority of my cases fully justifies my remarks to say nothing of the terrible suffering and the alarming symptoms that preceded dissolution.

It may be thought that I am using an argument that will prompt physicians to accept my views against their own judgment; but I agree that that is my object, provided that my advice is followed and that the details of the treatment are observed as minutely and carefully as the surgeon prepares his patient and himself for a modern aseptic operation. Pneumonia, according to my mind, comes as near being a disease for a surgeon's advice and counsel as any disease classified under a medical head. The surgeon who simply adds a little carbolic acid or bichlorid of mercury to a basin of water and washes his hands before operating is as unfair to his patient as the man who, from timidity and fear, subdivides the doses that I have recommended to be given and reports his cases, whether successes or failures, as being treated by my method.

It is quite true that quinin acts as the principal factor in pneumonia, but iron also is of the utmost importance. For nearly seventy-five years the physiologic action of quinin has interested the medical profession as has that of no other remedy, and we are still unable to state from a positive knowledge its true value.

I take great pleasure in submitting the clinical reports of Dr. A. L. Gustetter, acting assistant surgeon United States Public Health and Marine-Hospital Service, Nogales, Ariz., and Drs. E. M. Carpenter, T. F. Butzow, W. P. Haney and H. D. Dudley, of Cananea, Mex., to whom I extend my sincere thanks for the many valuable suggestions they have offered from time to time.

CASE REPORTS BY DR. A. L. GUSTETTER.

CASE 1.—*Patient.*—A. I., aged 55, Mexican, weight 210 pounds, married, with a very pronounced alcoholic history, was first seen March 24, when he walked into my office for medical advice.

Examination.—His temperature was 104; pulse, 120; respiration, 30. He was just recovering from a severe chill and complained of great pain in the left chest. I found a pneumonia involving the left lower lobe.

Treatment.—He was instructed to return to his home and to go to bed. He was given fifteen drops of saturated solution of potassium iodid, increasing two drops every two hours, until thirty-one drops had been given, when he was instructed to begin again with fifteen drops and repeat the same method of increasing the dose. His temperature was reduced to 102 and remained there almost constantly until March 27, the fourth day of his illness, when the following changes occurred:

Course of the Disease.—March 27: At 2:15 p. m. temperature was 104.4; pulse, 120; respiration, 31. There was pain in the right chest; also pain and tenderness in the region of the gall bladder and involvement of the lower lobe of right lung. Dr. W. J. Galbraith of Cananea, Mexico, was visiting in Nogales at the time and I invited him to see the case in consultation. Forty grains of quinin were administered, as a result of our consultation, and one hour later thirty-five grains more were given. At 5:30 p. m., three hours and fifteen minutes later, his temperature was 104; pulse, 114; respiration, 28. Twenty grains of quinin were given with the direction to administer fifteen drops of tincture of chlorid of iron every three hours. At 8:15 p. m. temperature was 102.8; pulse, 114; respiration, 23. At 11:15 p. m. temperature was 101; pulse, 110; respiration, 28; profuse perspiration. Patient said he felt fine and even on direct questioning made no complaint of ringing in the ears.

March 28: At 8:45 a. m. temperature was 101; pulse, 100; complained of slight deafness. Ten grains of quinin were ordered every three hours. At 11:45 a. m. temperature was 101.6; pulse, 98; respiration, 34. He had no difficulty in hearing, nor had he any ringing in the ears. At 2:45 p. m. temperature was 102.2; pulse, 108; respiration, 35. He was very uneasy. At 5:45 p. m. temperature was 101.4; pulse, 98; respiration, 29. Microscopic examination of urine showed the presence of granular casts. At 8 p. m. temperature was 101.6; pulse, 98; respiration, 36; the patient was slightly delirious.

March 29: At 6 a. m. temperature was 101.6; pulse, 98; respiration, 36; patient rested fairly well the previous night.

At 9:15 a. m. temperature was 101.8; pulse, 104; respiration, 35. Five grains of quinin were ordered and the iron was continued every three hours. At 12:15 p. m. temperature was 102.4; pulse, 108; respiration, 36. At 3:30 p. m. temperature was 103.2; pulse, 110; respiration, 36; 10 grains of quinin were administered. At 5:15 p. m. temperature was 103; pulse, 110; respiration, 36. Patient was delirious; 15 grains of quinin were given. At 8 p. m. temperature was 102.4; pulse, 118; respiration, 37; in his delirium patient got out of bed.

March 30: Temperature was 99.8; pulse, 100; respiration, 33. The quinin was suspended and the iron continued at irregular intervals on account of delirium. At 4:15 p. m. temperature was 101; pulse, 103; respiration, 34. The patient regained consciousness. Thirty grains of sodium bromid and 10 grains of chloral were ordered given at 8:30 p. m.

March 31: At 9:45 a. m. temperature was 99.6; pulse, 112; respiration, 36; the patient slept well all night and said he felt fine.

April 1: Sixth day of treatment. Temperature was 99; pulse, 88; respiration, 26. Patient was allowed to sit up in bed; he said he felt fine and had slept all night. He had a good appetite.

April 2: Patient was discharged without any remaining symptoms. Temperature, pulse and respiration were normal. Microscopic examination of urine showed presence of very few hyaline casts.

Remarks.—This case is interesting because of the age of the patient, obesity, the fact that he was an alcoholic subject and the delirium.

CASE 2.—*Patient.*—C. C., widow, aged 65, obese, asthmatic.

Examination.—April 1, 9 a. m.: Temperature, 100; pulse, 90; respiration, 26. The patient complained of pain in the left chest and of cough. Physical examination of lungs was negative.

Treatment.—I decided to watch the case, suspecting it to be one of beginning pneumonia. At 8 p. m. temperature was 103.2; pulse, 100; respiration, 32. Patient was spitting blood, breathing was labored and very painful. Owing to her age and weakened physical condition, only 20 grains of quinin were given. At 5 p. m. temperature was 103.6; pulse, 106; respiration, 44. Twenty grains of quinin were given and 15 minims of tincture of iron were ordered given every three hours.

April 2: At 8:55 a. m. temperature was 99; pulse, 70; respiration, 28; quality of pulse better than before her illness. Patient had all the physical signs and symptoms of pneumonia, involving the lower left lobe.

April 3: At 9:30 a. m. temperature was 102; pulse, 76; respiration, 25. Felt fine. Ten grains of quinin given every three hours. At 5:30 p. m. temperature was 100.8; pulse, 72; respiration, 30. Dose of quinin reduced to 5 grains every 4 hours. The iron was continued. Sodium bromid and chloral were ordered given at 8:30 p. m.:

April 4: Temperature was 99; pulse, 70; respiration, 28. Patient sat up in bed.

April 5: At 9:30 a. m. temperature was 98.6; pulse, 62; respiration, 24. Coughing had ceased; sputum was clear, and the patient sat up in a chair.

April 6: Sixth day of disease. Temperature, pulse and respiration were normal. The patient walked about the house, and was discharged without any remaining symptoms. This patient never suffered any delirium or complained of ringing in the ears.

CASE 3.—*Patient.*—R. T., aged 29, Mexican, miner.

Examination.—May 23, at 9 a. m., temperature was 104.8; pulse, 130; respiration, 50. The man complained of sharp pain in the right chest. He had suffered with a severe chill the night previous. Physical examination showed pneumonia, involving lower lobe of right lung, with annoying cough.

Treatment.—I gave 30 grains of quinin. May 23, at 10 a. m., temperature was 104.8; pulse, 140; respiration, 54; 30 grains of quinin were given and 15 drops of iron ordered every 2 hours. At 12:30 p. m. temperature was 103; pulse, 130; respiration, 50. There was profuse perspiration. At 3:30 p. m. temperature was 102.4; pulse, 110; respiration, 44. Patient was still perspiring; he did not complain of deafness or ringing in the ears. Ten grains of quinin were ordered and the iron was continued. At 6 p. m. temperature was 102; pulse, 106; respiration, 40.

May 24: At 9 a. m. temperature was 102.4; pulse, 110; respiration, 44. There was bloody expectoration. At 12:30 p. m. temperature was 101.6; pulse, 108; respiration, 40. Sodium bromid and chloral were ordered at 8:30 p. m.

May 25: At 9 a. m. temperature was 100; pulse, 94; respiration, 36; patient resting very well. Ten minims of iron were ordered given every 3 hours. At 4 p. m. temperature was 101; pulse, 90; respiration, 40. Sputum was rusty. The amount of quinin was reduced to 5 grains every 3 hours.

May 26: At 9 a. m. temperature was 100.2; pulse, 90; respiration, 34; patient was resting well. At 4 p. m. temperature was 102; pulse, 100; respiration, 40; patient did not feel so well.

May 27: At 8:30 a. m. temperature was 103.6; pulse, 110; respiration, 50. He complained of pain in the left chest. Examination showed involvement of middle and lower lobes of left lung. Thirty-five grains of quinin were administered and 10 drops of iron were ordered given every 2 hours. At 9:30 a. m. temperature was 104; pulse, 120; respiration, 48. Thirty-five grains of quinin were given. At 2 p. m. temperature was 102.4; pulse, 108; respiration, 38. There was profuse perspiration. At 6:30 p. m. temperature was 102; pulse, 100; respiration, 40; 15 grains of quinin were ordered given every 3 hours, and the iron was continued.

May 28: At 9 a. m. temperature was 101; pulse, 90; respiration, 36. Patient felt much better. At 4 p. m. temperature was 100; pulse, 94; respiration, 40.

May 29: At 9 a. m. temperature was 99; pulse, 98; respiration, 34.

May 30: At 9 a. m. temperature was 100; pulse, 90; respiration, 36. The amount of quinin was reduced to 5 grains every 3 hours, and the iron was continued. At 6 p. m. temperature was 99.8; pulse, 90; respiration, 32.

May 31: At 8:30 a. m. temperature was 99.6; pulse, 90; respiration, 34. Medicines discontinued; the patient felt fine, and his appetite was good.

June 2: Temperature, pulse and respiration were normal. He was able to sit up in a chair.

June 3: Discharged.

CASE 4.—*Patient.*—A. M., male, aged 14.

Examination.—June 4, 9 a. m., temperature, 103; pulse, 130; respiration, 30. Patient complained of severe pain in right chest, with frequent coughing.

A diagnosis was made of pneumonia, involving the lower lobe of the right lung.

Treatment.—At 10 a. m., June, 4, I administered 30 grains of quinin. At 11:30 a. m. temperature was 104; pulse, 134; respiration, 44. Twenty grains of quinin and 10 minims of tincture of iron were administered every 4 hours. At 4 p. m. temperature was 102.6; pulse, 120; respiration, 52. The patient was expectorating rusty-colored sputum and perspiring freely. Five grains of quinin were ordered given every 3 hours.

June 5: At 8:30 a. m. temperature was 101; pulse, 118; respiration, 40. The patient was coughing but little and the treatment was continued. At 4 p. m. temperature was 100; pulse, 108; respiration, 40.

June 6: At 9 a. m. temperature was 100.4; pulse, 110; respiration, 34. The patient had rested well the previous night; he had no pain and very little cough. At 5:30 p. m. temperature was 99.8; pulse, 100; respiration, 28. Quinin was discontinued; 10 drops of iron were given every 4 hours.

June 8: At 9:30 a. m. temperature was 99.4; pulse, 104; respiration, 26. Patient was allowed to sit up in bed one hour in the morning and again one hour in the afternoon.

June 9: Temperature was 98.8; pulse, 94; respiration, 22. The patient was able to sit up in a chair. He had a good appetite, and said he felt fine.

June 10: Seventh day after beginning treatment and eighth day of disease. Patient was discharged with normal temperature, pulse, and respiration.

CASE 5.—*Patient.*—Miss M., aged 22, American. On my first visit, November 8, I found that, on November 4, the patient had suffered with a severe chill. She complained of pain in the lower part of the right chest, with annoying cough. The sputum was blood-tinged.

Examination.—Temperature was 104.6; pulse, 130; respiration, 50. There was severe pain over the entire right chest; breathing was labored, and expectoration bloody.

Diagnosis.—Pneumonia, involving middle and lower lobe of right lung.

Treatment.—I administered 45 grains of quinin as the initial dose. At 9 p. m. 30 grains more were administered and 15 minims of tincture of iron were ordered given every 2 hours.

November 9: At 7:30 a. m. temperature was 101; pulse, 100; respiration, 36. At 2:30 p. m. temperature was 100; pulse, 106; respiration, 34. At 8:30 p. m. temperature was 100.4; pulse, 110; respiration, 40.

November 10: At 8 a. m. temperature was 99.4; pulse, 90; respiration, 30. Patient able to sit up in bed. Iron continued. At 6 p. m. temperature was 99; pulse, 78; respiration, 32.

November 11: At 8:30 a. m. temperature was 98.4; pulse, 82; respiration, 24. Patient sitting up in chair; had a good appetite and felt comfortable.

November 12: At 9:30 a. m. temperature, pulse and respiration normal. Patient discharged.

Remarks.—My experience in the treatment of pneumonia with quinin and iron comprises 13 cases. All of these terminated in successful recoveries, as against the previous mortality which held forth in Nogales and vicinity, of about one recovery out of five cases treated by other therapeutic measures. I have had ample opportunity in this section of the country to try all, or nearly all, of the most approved remedies in the treatment of pneumonia, but I have always felt that, if the patient recovered, it was in spite of the medicines that were used. The other cases which I have not cited all went on to recovery in much the same time and manner.

From my most recent experience with the quinin treatment, I feel satisfied that, if it were continued in fairly large doses until the temperature dropped to normal, involvement of the other lobes of the same lung or of the healthy lung would not occur. I believe the question of how much quinin should be administered must depend on the severity of the general symptoms, age and especially the length of time the disease has progressed before the treatment is begun. In my experience with children, I have observed that they stand proportionately large doses as well as adults.

I am frank to confess that I felt considerable timidity when I administered the first large doses, but the immediate relief which the remedy afforded overcame my hesitancy. My experience with Dr. Galbraith's treatment has convinced me that we have in quinin and iron a specific for pneumonia.[2]

CASE REPORTS BY DR. T. F. BUTZOW.

CASE 1.—*Patient.*—J. H., aged 42, saloonkeeper.

History.—The patient was a hard drinker and was just recovering from a two weeks' debauch. On the night of November 6 he had a chill and drank over a quart of whisky, thinking it might warm him up.

Examination.—Temperature, 105.5; pulse, 140; respiration, 46. He complained of pain in the lower lobe of the right lung, with consolidation.

Diagnosis.—Lobar pneumonia.

Treatment.—Fifty grains of quinin were administered at 10 p. m., followed one hour later by 25 grains.

November 7: At 11 a. m. temperature was 103.4; pulse, 118; respiration, 30. Quinin, 50 grains, was administered and tincture of iron, 15 minims, was ordered every 3 hours. At 8 p. m. temperature was 101.8; pulse, 100; respiration, 22. At 10 p. m. 40 grains of quinin were given, and at 11 p. m. 20 grains more. The iron was continued.

November 8: At 11 a. m. temperature was 99; pulse, 80; respiration, 20. Sputum was bloody. At 8 p. m. temperature was 101; pulse, 84; respiration, 20. At 10 p. m. 40 grains of quinin were administered, followed one hour later by 20 grains; the iron was continued.

November 9: At 11 a. m. temperature was 98; pulse, 80; respiration, 20. At 8 p. m. temperature was 99; pulse, 80; respiration, 19; 20 grains of quinin were administered.

November 10: At 11 a. m. temperature was 97.2; pulse, 76; respirations, 19. At 8 p. m. temperature was 99; pulse, 76; respiration, 19.

November 11: At 11 a. m. temperature was 97; pulse, 74; respiration, 18. At 8 p. m. temperature was 99; pulse, 76; respiration, 19; 15 grains of quinin were administered.

November 12: At 11 a. m. temperature was 97; pulse, 70; respiration, 18. At 8 p. m. temperature was 97; pulse, 56; respiration, 18.

November 13: At 11 a. m. temperature, pulse, and respiration were normal. Patient was discharged and placed on small doses of iron and quinin as a tonic.

CASE 2.—*Patient.*—Mexican, male, aged 43, smelterman.

History.—This man was a mescal (Mexican whisky) suject. His wife said he had been on a drunk for about a week, and that he came home on the morning of November 20 complaining of pain over his entire chest.

Examination.—November 20, 11 a. m., he complained of severe pain over the region of the gall bladder, and was expectorating bloody sputum. The lower right lobe was consolidated. Temperature was 105.6; respiration, 46; pulse, 148.

Diagnosis.—Lobar pneumonia.

Treatment.—Fifty grains of quinin were given at 11 a. m. and 25 grains one hour later. At 8 p.m. temperature was 104; respiration, 38; pulse, 120; 40 grains of quinin were administered and 25 grains one hour later.

November 21: At 11 a. m. temperature was 102.4; respiration, 30, and pulse, 109. Thirty grains of quinin were administered. At 8 p. m. temperature was 102; pulse, 118; respiration, 36; 50 grains of quinin were administered and 25 more one hour later.

November 22: At 11 a. m. temperature was 99; respiration, 26; pulse, 98. Fifteen minims of iron were ordered given every 3 hours.

November 23: At 11 a. m. temperature was 98.6; respiration, 99; pulse, 87. The iron was continued. At 8 p. m. temperature was 100; pulse, 91; respiration, 23. Thirty-five grains of quinin were ordered and 15 grains more one hour later.

November 24: At 11 a. m. temperature was 99.2; respiration, 20; pulse, 90. The iron was continued. At 8 p. m. temperature was 102; respiration, 24; pulse, 100. Forty grains of quinin were administered and 20 grains more one hour later.

November 25: At 11 a. m. temperature was 98.2; respiration, 19; pulse, 97. The iron was continued.

November 26: At 11 a. m. temperature was 97; respiration, 19; pulse, 74.

November 27: At 11 a. m. temperature was 96.8; respiration, 18; pulse, 68. The iron was continued. Patient was discharged, November 27, with normal temperature, pulse, and respiration. Tonic doses of iron and quinin were ordered 3 times a day for one week.

CASE 3.—*Patient.*—F. F., Mexican, aged 35, miner.

History.—The patient had a severe chill, with pain on the right side, on evening of November 19. He had been on a ten days' drunk and gave a history of being a periodical drunkard.

Examination.—There was pain and tenderness in the region of the gall bladder and the lower lobe of the right lung. Respiration was labored, and the sputum bloody.

Diagnosis.—Pneumonia, involving right lower lobe.

Treatment.—November 20, 10 a. m., temperature was 103.8; pulse, 108; respiration, 40. Fifty grains of quinin were administered and 25 grains more one hour later. At 3 p. m. temperature was 97; pulse, 92; respiration, 28. At 7 p. m. temperature was 100; pulse, 80; respiration, 28; 20 grains of quinin administered.

November 21: At 7 a. m. temperature was 102; pulse, 75; respiration, 33. Twenty-five grains of quinin were administered and 15 grains more one hour later. At 7 p. m. temperature was 103; pulse, 80; respiration, 28. Forty grains of quinin were administered and 20 grains more one hour later; iron was also given.

2. Compare the record of Dr. Gustetter's first two cases with the treatment of his last three.

November 22: At 7 a. m. temperature was 99; pulse, 70; respiration, 24.

November 23: Temperature was 97.2; pulse, 60; respiration, 28. At 7 p. m. temperature was 99; pulse, 65; respiration, 24. Twenty grains of quinin were administered.

November 24: Temperature was 98; pulse, 60; respiration, 25.

November 25: At 7 a. m. temperature was 98; pulse, 65; respiration normal.

November 26 and 27: Temperature and pulse remained normal.

November 28:. The patient was discharged, with normal temperature and pulse. Tonic doses of quinin and iron were ordered 3 times a day during the last 3 days, to be continued 4 days more.

Remarks.—I wish to call attention to the fact that in my experience quinin and iron, when given as recommended by Dr. Galbraith, act practically as specifics in pneumonia. It is my experience that alcoholic subjects respond to the treatment more readily than do non-alcoholic patients. The effects of quinin on the circulation can not be questioned. In every case the same results are obtained, namely, a normal tension and good volume of pulse within twenty hours from the initial dose. The severe pain complained of is not only relieved, but prevented and seldom does it become a factor of any importance from the beginning of the treatment until the patient is well. In all my cases I continue tonic doses of quinin and iron at least one week after the patient is discharged.

CASE REPORTS BY DR. H. D. DUDLEY.

CASE 1.—*Patient.*—J. L., male, aged 32; nationality, Mexican; miner.

Family History.—Negative.

Personal History.—The patient has never been sick since childhood. He is robust and well developed; he smokes and uses spirits. There was no specific history. He was taken ill May 20, about 6 p. m., with a severe chill lasting for about one hour, followed by headache and pain in his bones. During the night he began to have pain in his left side and was kept awake by coughing.

Second day: Cough and pain both increased in severity. During the afternoon he began to expectorate blood-stained sputum. He had great thirst and was very hot; he vomited twice during the day and was delirious at times during the night.

Examination.—I first saw the patient at 10 a. m. on the third day of the disease. I found him with a temperature of 105; pulse, 140; respirations very superficial and a general toxic appearance. Percussion revealed an absolute dullness extending from supraclavicular region over the entire lung area on left side and front area of precordia; dullness obliterated. Auscultation showed bronchial breathing at apex; some crepitant râles lower down in front and posteriorly a distinct pleuritic rub.

Treatment.—Fifty grains of quinin sulphate were given at once, followed in 2 hours by 20 more. About 30 minutes after taking second dose the patient vomited. At 3:30 p. m. temperature was 104.2; pulse, 140; 20 grains of quinin were administered. A calomel purge, followed by a saline in 6 hours, was ordered given that evening. The cough and pain continued during the night, and the patient became delirious.

Fourth day: At 5 a. m. I received a hurried call by messenger, who stated that the patient was dying. On arrival, I found his temperature 102; pulse, 120. Thirty grains of quinin were ordered. At 4 p. m. temperature was 104; pulse, 100. The patient had a copious bowel movement, and there was profuse perspiration, with little cough and no expectoration.

Fifth day: At 11 a. m. temperature was 98; pulse, 100. There was slight cough and no pain in chest on forced inspiration. An expectorant cough mixture was ordered. At no time were there any symptoms of cinchonism.

CASE 2.—*Patient.*—B. V., aged 24, Mexican, miner. (History unobtainable.)

History.—On November 1, patient compiained of headache, with slight cough and pains in back and the legs. On November 2, he had a chill, followed by fever and pain over the right thoracic region.

November 3: I first saw the patient at 4:30 p. m.; temperature was 103.5; pulse, 88; rapid, shallow respiration; increased vocal fremitus; tubular breathing, and pronounced dullness over the right upper lobe. Patient refused treatment, and no medicine was taken that day or night.

November 4: Temperature was 104.5; pulse, 120. Quinin, 50 grains, was administered and followed in 2 hours by 30 grains more. Ten grains every 2 hours were ordered given during the night.

November 5: Temperature, 99; pulse, 80. The patient was coughing a little, but had no pain; he was nauseated. I gave 5 grains of chloretone, followed in one hour by 30 grains of quinin.

November 6, 7, 8 and 9: Temperature and pulse remained normal. The recovery was uneventful.

Remarks.—The specific effects of the treatment of pneumonia with quinin and iron in those cases in which I have used it are very gratifying. However, I find great difficulty in using this or any other treatment among the people of my district.

CASE REPORTS BY DR. W. P. HANEY.

CASE 1.—*Patient.*—Mrs. P., aged 30, Mexican, mother of three children, about seven months pregnant, was suddenly taken with chill, followed by pain in right side, fever, and bloody sputum.

Examination.—I saw her on the first day of her illness about 4 p. m. Temperature was 104; pulse, 120, and respirations rapid. She complained of severe pain in the region of the right side. There was dullness over the right lower lobe, with slight consolidation.

Treatment.—Fifty grains of quinin were administered and 10 minims of tincture of chlorid of iron were ordered given every 4 hours.

Second day: Temperature was 100; pulse, 96; sputum clear. Twenty grains of quinin were administered and the iron was continued.

Third day: Temperature was slightly subnormal; pulse, 74. She had no pain and respiration was easy. There was slight mucopurulent expectoration. Quinin in small doses and an expectorant mixture were ordered and continued until the sixth day, at which time the patient was discharged from treatment.

CASE 2.—*Patient.*—M. F., aged 36, Mexican, miner.

History.—The patient stated that he was taken ill three days before, about 4 in the morning, shortly after returning from his work in the mines. He had a severe chill at the time, lasting about 40 minutes, followed by severe pain in left side, and later in the day he began to spit blood. He was treated by home remedies for the first three days, but grew steadily worse, and on the morning of October 12 I was called to see him.

Examination.—I found him with a temperature of 103.8; pulse, 140, and respiration, 48, very shallow, and with a pronounced expiratory grunt. Cough was hard and profuse, with rusty expectoration. He had severe pain in his left axillary region, under seventh and eighth ribs. On physical examination, I found consolidation of the left lower lobe, with numerous subcrepitant râles over this area.

Treatment.—I gave him at once 60 grains of bisulphate of quinin and ordered 15 minims of tincture of iron every 3 hours.

October 13. Temperature was 101; pulse, 100; respiration, 24. He complained of less pain in his side, and the sputum had become clear; respiration was easy, and cough loose. Thirty grains more of quinin were administered; the iron was continued.

October 14: Temperature was 99.5; pulse, 88; respiration, 20. Cough was loose, with profuse mucopurulent expectoration; there was slight pain in the left side. Twenty grains of quinin were administered, and the iron was continued.

October 15: Temperature was 98; pulse, 68; respiration, 16. There was slight pain in the left side. He had severe cough; the expectoration continued about the same. Elixir of iron, quinin and strychnin was continued for 5 days, and then the patient was discharged.

CASE 3.—*History.*—October 24 was called in to see Mrs. A.

I found that eight days previously she had been delivered of a seven-pound girl by a midwife, and on the fifth day of her puerperium she was seized with severe pain in the right side, followed by a severe chill, after which she began to expectorate rusty sputum.

Examination.—Her temperature was 103.6; pulse, 120, and respiration, 40. She was practically unable to cough on account of the severe pain in right side. On physical examination, I found consolidation of the right lower lobe; no evidence of vaginal or uterine inflammation, except what one would expect after a normal delivery.

Treatment.—Fifty grains of sulphate of quinin were given, followed in one hour by 25 more. One-half grain of codein was ordered every three hours to relieve pain.

October 25: Temperature was 100; pulse, 92; respiration, 26. The pain in the left side was relieved; the sputum was still rusty. She had not taken the last 25 grains of quinin on account, as she said, of the bitter taste. Thirty grains of quinin were administered and the iron continued in 15-minim doses every 3 hours.

October 26: Temperature was 98.6; pulse, 76; respiration, 18. There was no pain in side, except on coughing.

October 27: Temperature was normal; pulse, 100, and respiration, 20. There was still severe cough. A cough mixture was ordered every 3 hours.

October 28: Temperature, pulse and respiration were normal. Cough mixture ordered continued for 3 days, at which time she was discharged, well.

Remarks.—In conclusion, I wish to state that the only other remedy that I find comparable to the action of quinin and iron in pneumonia is the antidiphtheritic serum in diphtheria. My recommendation is to begin the use of quinin and iron as early as possible. The only difficulty I experience in the administration of quinin and iron in pneumonia is the fact that I am obliged to give the medicine myself.

DR. E. M. CARPENTER'S CASE REPORTS.

CASE 1.—*Patient.*—A. V., aged 21, Mexican, laborer, was first taken sick Aug. 8, 1905; first seen August 10, and was admitted to hospital August 11, 10:45 a. m., with a temperature of 102.6; pulse, 120, and respiration, 38. Examination showed pneumonia, involving the lower lobe of the right lung. Quinin, 30 grains, was administered at 11:30 a. m. and 15 grains more one hour later. At 7 p. m. temperature was 102; pulse, 116; respiration, 32.

August 12: At 7 a. m. temperature was 101.2; pulse, 112; respiration, 40. Patient slept well during the night. At 12:45 p. m. temperature was 104.4; pulse, 120; respiration, 40. Thirty grains of quinin were administered and 20 grains more one hour later. Tincture of iron, 15 minims, was ordered given every 3 hours. At 7 p. m. temperature was 101.6; pulse, 112; respiration, 36.

August 13: At 6 a. m. temperature was 101; pulse, 92; respiration, 30. At 12 p. m. temperature was 102; pulse, 83; respiration, 24. Ten grains of quinin were ordered every hour for 3 hours. At 7:45 p. m. temperature was 103; pulse, 96; respiration, 32. Thirty grains of quinin were administered and 15 minims of tincture of iron were ordered given during the night.

August 14: At 6 a. m. temperature was 101.4; pulse, 100; respiration, 32. At 1 p. m. 40 grains of quinin were administered and iron continued. At 4 p. m. temperature was 100.4; pulse, 88; respiration, 24.

August 15: At 6 a. m. temperature was 98.2; pulse, 68; respiration, 24. The iron was continued.

August 16: Temperature, pulse and respiration were normal.

August 17: Patient was discharged from the hospital, well.

CASE 2.—*Patient.*—J. A., aged 19, Mexican, occupation, carman in mines.

Examination.—Patient was first seen Feb. 17, 1905, at 9 p. m. He was in the midst of a severe chill, which lasted nearly an hour; his temperature was 104.6; pulse, 140; respiration very rapid. Examination showed lobar pneumonia, involving the right lower lobe.

Treatment.—Sixty grains of quinin were administered at 9:20 p. m., followed by 30 grains more one hour later.

February 18: At 8 a. m. temperature was 101; pulse, 100; his general condition was much brighter. He was transferred to the Ronquillo Hospital, arriving there at 11 a. m. The hospital record shows the following chart:

February 18: At 11 a. m. temperature was 100.8; pulse, 96; respiration, 32. Fifteen grains of quinin were administered and 15 minims of tincture of iron ordered every 3 hours. At 7 p. m. temperature was 99.8; pulse, 83; respiration, 28.

February 19: At 6:30 a. m. temperature was 99.8; pulse, 80; respiration, 19. At 4 p. m. temperature was 98; pulse, 53; respiration, 16.

February 20 and 21: His temperature, pulse and respiration remained normal, and so continued until the morning of February 22, when he was given his clothes and permitted to walk about the hospital. Watching an opportune time while the ward tender was temporarily absent from the ward, he deserted the hospital, making his exit through the back door, and disappeared. On February 28, at 11 a. m., he was returned to the hospital with a temperature of 104; pulse, 130; respiration, 48, and in a very pronounced septic condition. He rapidly grew worse and expired the night of March 2.

OBSERVATIONS OF THE QUININ AND IRON TREATMENT IN PNEUMONIA.

First.—Large doses of quinin given during the initial chill or stage of congestion may materially modify the course of the disease and in some cases abort it.

Second.—Large doses given when the disease has progressed well into the second stage, or stage of red hepatization without treatment, has a decided influence on the temperature and pulse, reducing the former, as well as the latter, which is steadied and increased in volume. These cases all terminate by lysis instead of crisis.

Third.—Large doses of quinin and iron given in the later stage of pneumonia, when no previous treatment has been given, have a beneficial action in controlling the temperature and pulse. In those neglected cases where sepsis is manifested to its fullest extent, an unfavorable result must naturally be expected.

CONCLUSIONS.

The first attention rendered on admittance to the hospital is a warm bath, followed by a calomel or phosphate of soda purge. The initial dose of quinin is administered in from one to three hours later, provided the stomach is not disturbed. If the temperature has reached 105 or over, from 60 to 70 grains of quinin sulphate are given, as the initial dose, followed in one hour by usually one-half of the first dose. If the temperature ranges between 103 and 104, from 40 to 50 grains are given, as above. If a lower temperature is found, 40 grains may be given. This is the smallest dose I would advise as the initial one.

I begin the administration of tincture of iron within three or four hours after the second dose of quinin is administered in doses ranging from 10 to 15 minims every two to six hours, depending on the condition of the pulse. In the event of the temperature rising to 101 or 102, after it has reached the normal or subnormal mark, I administer from 40 to 50 grains of quinin at one dose, and continue the iron in 15 minim doses every three or four hours.

I strongly advise against any compromise in the way of dividing the doses of either quinin or iron during the active pneumonic stage. Occasionally the stomach will become rebellious, but as a rule this may be overcome by chloretone or pepsin and guaiacol. I dress my patients with as light-weight clothing as possible, provide thorough ventilation and encourage them to take plenty of liquid nourishment.[3]

3. So many physicians have expressed a desire to visit Cananea and witness my work that I extend a cordial invitation to all who are interested in it to do so at their convenience.

THE FORMATION OF THE CORPUS LUTEUM IN THE GUINEA-PIG.*

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HISTORY OF RESEARCH.

Three considerations make it desirable to undertake a detailed study of the development of the corpus luteum of the guinea-pig.

1. Although a number of very careful investigations on the development of the corpus luteum have been published within the last ten years, there are a number of essential points about which different writers still disagree. It is not necessary to give a review of the literature on this subject, as this has been done repeatedly within recent years.[1] In regard to the development of the corpus luteum of the guinea-pig, there exists a short paper of Belloy,[2] who does not give distinct statements in regard to the age of the different corpora lutea which he describes. His results are in some important points opposed to the results obtained in other animals by different investigators. The most recent paper on the development of the corpus luteum which refers, in part at least, to the guinea-pig is by Jankowski,[3] who states that the corpus luteum is formed by theca interna and that the granulosa disintegrates after the rupture of the follicle. His conclusions are based on insufficient evidence, as he has not examined a consecutive series of ovaries.

2. Former investigations into the normal and pathologic anatomy of the ovaries[4] made it desirable to determine the origin of the cells which are characteristic of the corpus luteum. Similar cells can be found in certain pathologic new formations of the mammalian ovary. For an understanding of the processes leading to those new formations a study of the development of the normal corpus luteum was desired.

3. The formation of the corpus luteum represents a very interesting instance of growth, which constitutes an apparent transition between the processes found in wound healing and between processes observed in tumor growth. The structures recently described by me in the ovary of the guinea-pig show a still closer resemblance to "transitory tumors." The study of the development of the corpus luteum in the guinea-pig is, therefore, of a general pathologic interest.

MICROSCOPIC EXAMINATION OF OVARIES.

Sixty ovaries of thirty, mostly (about three months old), guinea-pigs, were used and cut into serial sections. Zenker's fluid, paraffin and celloidin, hematoxylin and eosin were used. At certain stages, which were of greater importance, more ovaries were investigated than at others.

Copulation was observed and the ovaries were used at the following periods after copulation: Six hours, 7¼ hours, 9 hours (two guinea-pigs), 10 hours, 11 hours, 11½ hours, 12 hours (two guinea-pigs), 12¼ hours, 12½ hours, 14¾ hours, 15 hours, 17 hours 50 minutes, 22 hours, 24 hours, 25 hours 50 minutes, 28 hours, 30 hours 50 minutes, 32 hours 20 minutes, 34 hours, 36 hours, 38 hours, 49½ hours, 50½ hours, 60 hours, 74½ hours, 77½ hours, 100½ hours, 127 hours.

1. *At Six Hours After Copulation* (Celloidin).—No ruptured follicle is visible.

2. *At Seven and One-Quarter Hours After Copulation* (Celliodin).—Place of rupture is visible. Granulosa is preserved. In some of the granulosa cells karyorrhexis is present. Most of the cells are well preserved. Only very little extravasated blood is found in the ruptured follicle. Theca interna and granulosa can easily be distinguished. Theca interna is hyperemic. The granulosa cells are long drawn out. This guinea-pig was born a short time before copulation.

3. *At Nine Hours After Copulation* (Celloidin).—Two corpora lutea are present in one ovary. The place of rupture is visible. The lumen of the cavity persists. In one of the corpora lutea a part of the granulosa penetrates through the place of rupture into the abdominal cavity and lies on the germinal epithelium. *Liquor folliculi* is still present and it is drawn out in fibers. The granulosa is well preserved, only near the place of rupture the covering of the granulosa is very imperfect. Mitoses can not be seen in the granulosa cells. Some of the granulosa cells which have been lying free in the central cavity are karyorrhectic. Mitoses are present in the theca interna, which is hyperemic. At most places the demarcation between granulosa and theca interna is not sharp. At some places, however, the granulosa is somewhat detached from the theca interna and both layers can be easily distinguished. No blood is present in the ruptured follicle, with the exception of the immediate neighborhood of the place of rupture. Theca interna and granulosa form several folds. The granulosa cells are drawn out in the direction of the place of rupture. The theca interna cells are likewise drawn out at some places. Polynuclear leucocytes are present in the theca interna.

4. *At Nine Hours After Copulation* (Paraffin).—Ovaries are hyperemic; no ruptured follicle is present. Three old corpora lutea are visible.

5. *At Ten Hours After Copulation* (Paraffin).—A small cavity is preserved in each of the ruptured follicles. Liquor folliculi is present in the cavity. Polynuclear leucocytes are found in the central cavity. The granulosa is well preserved. The cells are partly vacuolar. Some of the central granulosa cells are karyorrhectic. The large majority of the granulosa cells are well preserved. The blood vessels of the theca interna are very much dilated. They contain polynuclear leucocytes. At some places between the vessels large cells are found which present the same appearances as granulosa cells. No mitoses can be seen in the granulosa cells. Mitoses are present at the borderline between theca interna and granulosa; they are probably situated in the interna cells. Granulosa and theca interna form folds.

6. *At Eleven Hours After Copulation* (Paraffin).—The place of rupture of the follicle is open. The corpus luteum is not prominent over the surface of the ovary. A small central cavity is present. In a few sections a few red blood corpuscles can be seen in the central cavity. The granulosa is well preserved. Many granulosa cells, especially the centrally situated cells, show karyorrhexis. Some of the cells are vacuolar. Mitoses are not visible in the granulosa. The theca interna forms protrusions into the granulosa at some places. The blood vessels of the theca interna are very much dilated. Some of the granulosa cells are horizontally arranged (parallel to the theca interna); in some places, however, this arrangement does not exist. The interna cells may assume a polygonal shape with a round or oval nucleus. Such cells which are found around the blood vessels can not be distinguished from granulosa cells. Mitoses can be found in the theca interna cells. The line of demarcation between granulosa and theca interna is not sharp. (Two ruptured follicles.)

7. *At Eleven and One-Half Hours After Copulation* (Par-

* From the Pathological Laboratory of the University of Pennsylvania, on grant of the committee of scientific research.

1. I refer especially to the very complete reviews of Sobotta in the Ergebnisse d. Anatomie u. Entwickelungsgeschichte, vol. viii, 1898, and vol. xi, 1902, and to the paper of F. G. Clark, "Ursprung, Wachstum u. Ende d. corpus luteum nach Beobachtungen am Ovarium des Schweins und des Menschen. Arch. f. Anat. u. Physiol. Anat. Abteilung, 1898.

2. G. Belloy: "Recherches sur l'origine des corps jaunes de Fovaire chez le rat et le cochon d'Inde, Comptes rendus de l'Association des Anatomistes," Paris, 1899.

3. J. Jankowski: "Beit. z. Entstehung d. corpus luteum d. Säugethiere." Archiv. f. mikrosk. Anat., 1904, vol. lxiv.

4. L. Loeb: "Ueber eine aus Luteingloebe Gewebe bestehende Neubildung in dem Ovarium eines Kalbes." Virchow's Archiv., vol. clxvi, 1901. "On Progressive Changes in the Ova in Mammalian Ovaries." Jour. Med. Research, 1901, vol. vi. "Ueber hypertrophische Vorgänge bei der Follikelatresie, etc." Arch f. mik. Anatomie u. Entwicklungsgeschichte, vol. lxv, 1905.

affin).—Two ruptured follicles. Place of rupture is still open; a small cavity is present. The opening at the place of rupture is very narrow. The follicle is very little prominent over the surface of the ovary at the place of rupture. The granulosa is well preserved. The granulosa cells are partly vacuolar. Cells of the inner half of the granulosa are drawn out into long threads. The nuclei in these cell threads become partially dissolved. A mitosis can be seen in the granulosa near the place of rupture. The direction of the spindle corresponds to the traction which is exerted toward the place of rupture. At one place two parallel rows of fusiform cells are seen extending into the granulosa from the theca interna. Mitoses are present in the theca interna near the border of the granulosa. The line of demarcation between theca interna and granulosa is not sharp, and some of the mitoses may therefore possibly belong to granulosa cells. Mitoses are present in the theca interna near the blood vessels and also at the border between theca interna and externa. Mitoses seen in the interna belong in part to dividing endothelial cells of capillaries. The theca interna cells may be very large, and those cells can not be distinguished from granulosa cells.

8. *At Twelve Hours After Copulation* (Celloidin).—Place of rupture is still visible; the cavity of the ruptured follicles preserved. Liquor folliculi is drawn out into fibers and some granulosa cells are drawn out in the same direction; the granulosa is well preserved. Hemorrhages are present in the tissue near the place of rupture. No mitoses are visible; the theca interna is very hyperemic.

9. *At Twelve and One-Quarter Hours After Copulation* (Paraffin).—Three ruptured follicles are present. The place of rupture is still open. The central cavity is preserved. Liquor folliculi (or a viscid fluid of a similar character) is present. In one follicle this fluid protrudes through the place of rupture. The red viscid mass in the cavity is at least in part produced through the disintegration of the inner granulosa cells, the nuclei of which may become dissolved. The granulosa cells of the inner layer can be drawn out into long fibers in which the nuclei may disappear. In the whole, the granulosa is well preserved, although it is in part vacuolar. Karyorrhectic cells are visible in the central part of the granulosa. A number of mitoses can be seen in the granulosa cells, in the outer, middle and inner layers of the granulosa. The diasters are arranged according to the direction in which the cells are drawn out. In the monaster stage the chromatin is sometimes drawn out in the same direction. In most places a sharp line of demarcation exists between the granulosa and the theca interna. Especially when the blood vessels and cells of the theca interna are running radially toward the granulosa it is difficult to determine where the granulosa begins. The distinction is easier when they are arranged in a horizontal direction. At places the line of demarcation between the two layers is still visible. Mitoses are present at the border between the two layers, and it is sometimes impossible to decide with certainty whether the mitoses belong to granulosa or to theca interna cells. The blood vessels are especially dilated near the place of rupture. Many mitoses are present in the interna. Some belong to endothelial cells of capillaries; others are found in cells near the blood vessels. Sometimes the central part of such a cell is in contact with the capillary, although the peripheral parts of the cell are removed from the vessel wall. It is frequently impossible to decide with certainty whether or not we have to deal in such cases with endothelial cells. The cells of the theca interna can be large and indistinguishable from the granulosa cells. Mitoses can also be present in endothelial cells of the blood vessels of the theca interna.

10. *At Twelve and One-Half Hours After Copulation* (Paraffin).—Place of rupture is still visible, but the follicle is no longer open. The granulosa cells of the opposite sides are in close contact; in this way the mouth of the follicle is closed. The defect in the granulosa at the place of rupture is repaired by the close attachment of the granulosa cells at the place of rupture. The ruptured follicle forms a little prominence over the surface of ovary at the place of rupture. A small cavity is present in the closed follicle. The granulosa cells are in part vacuolar. The nuclei of some of the inner granulosa cells become karyorrhetic, and some cells become dissolved. In many places the theca interna and granulosa are not distinct; the theca interna cells are large. At other places the line of demarcation is clear. The endothelial cells of the capillaries of the theca interna may become large and round. Mitoses are present in theca interna cells. Mitoses are also present in theca externa cells and in endothelial cells of the blood vessels of the theca externa. Blood vessels have not yet entered the granulosa.

11. *At Fourteen and Three-Quarter Hours After Copulation* (Paraffin).—Two ruptured follicles are present. The follicles are closed merely through the granulosa. A small cavity with a little granular matter is seen in the center of the follicles. Many polynuclear leucocytes are present in the central cavity. A number of cells become dissolved in the central cavity. Near the place of rupture dilated blood vessels and lymph vessels are visible. Extravasated blood is also present in the connective tissue near the place of rupture. The granulosa is well preserved; its cells are partially drawn out; no blood vessels and connective tissue can be seen in the granulosa. The line of demarcation is visible between granulosa and theca interna at some places, not at others. Theca interna cells are in part large and polygonal. The blood vessels of the theca interna begin to assume a radial arrangement. At such places the cells of the theca interna and granulosa present frequently the same appearance, and the theca interna and granulosa can therefore not be distinguished. At other places the blood vessels of the theca interna are arranged horizontally, and here theca interna and granulosa can be distinguished. Mitoses are present in different parts of the theca interna near the blood vessels. When they are situated at the borderline between theca interna and granulosa, it is difficult to say to what kind of cells these mitoses belong. A number of the endothelial cells of the capillaries of the theca interna are much swollen, and it is sometimes difficult to determine whether or not a mitosis seen in the immediate neighborhood of a capillary belongs to such an endothelial cell. Many blood vessels of the theca interna are much dilated. The leucocytes seen in the interna stain frequently strongly red with eosin; the polynuclear leucocytes nearer the central cavity take less eosin.

12. *At Fifteen and One-Quarter Hours After Copulation* (Celloidin).—The follicles are closed by granulosa. Connective tissue has not yet regenerated at the place of rupture. A small cavity is present in the center of the follicles. The central mass which stains red with eosin is in part produced by disintegrating granulosa cells. Very little or no blood is present in the central cavity; a few leucocytes are, however, visible in the central cavity. Small hemorrhages may be found in the connective tissue near the place of rupture. The granulosa is well preserved. A few cells are disintegrated in the center. No vessels are visible in the granulosa. The borderline between the granulosa and the theca interna is wavy. Where the interna forms a fold its blood vessels are dilated; they are also dilated near the place of rupture. Mitoses are present in the theca interna, and at the borderline between the theca interna and granulosa. At some places a sharp line of demarcation exists between the theca interna and granulosa; at others no sharp line is visible. The theca interna is partly also drawn out and its blood vessels are dilated.

13. *At Seventeen Hours and Fifty Minutes After Copulation* (Celloidin).—The ruptured follicles are closed by granulosa and by a homogeneous mass which stains red with eosin. Polynuclear leucocytes are present in this mass. The cavity of the follicle is small and does not contain blood. The follicle is somewhat prominent over the surface of the ovary. The lymph vessels in the albuginea near the place of rupture are dilated. In the inner zone of the granulosa there is a little karyorrhexis present. A part of the central granulosa cells are long drawn out and produce fibers when they disintegrate. No blood vessels or connective tissue can be seen in the granulosa. A part of the granulosa protrudes into the cavity. On the whole, the granulosa is well preserved, and mitoses can be seen in different parts of the granulosa. The boundary line between the granulosa and theca interna is wavy. The demarcation between these two layers is not sharp, neither is the theca interna sharply separated from the theca externa. Mitoses

are present in the interna, in the endothelial cells of blood vessels as well as near the blood vessels. Two ruptured follicles are seen.

14. *At Twenty Hours After Copulation* (Paraffin).—A small cavity lies in the ruptured follicle. The place of rupture is closed by a red staining homogeneous mass. Near the place of rupture extravasation of blood is seen in the connective tissue and the lymph vessels are dilated. Old corpora lutea are present in both ovaries. The size of the granulosa cells is about the same as fifteen hours after copulation. The granulosa presents a vacuolar appearance. No blood vessels or connective tissue are visible in the granulosa. At many places no sharp line of demarcation exists between the theca interna and granulosa. At others a layer which is very poor in nuclei separates both layers. The cells of the theca interna frequently can not be distinguished from the granulosa cells, and at some places the interna seems to have disappeared. Mitoses are present in cells of the theca interna and in endothelial cells of its blood vessels. At some places the latter take a radial direction toward the granulosa. At the border between theca interna and granulosa mitoses can be seen. In this region some cells show karyorrhexis. Near the place of rupture mitoses are also visible in the theca interna. Mitoses are likewise present at the border between theca interna and externa. Mitoses are, furthermore, found in endothelial cells of blood vessels of the theca externa near the place of rupture, at a place where many large capillaries are seen, which are in part perhaps newly formed.

15. *At Twenty-two Hours After Copulation* (Paraffin).—Two ruptured follicles are closed by cells which are large and resemble the granulosa and large theca interna cells. Capillaries are seen in this tissue. Spindle-shaped cells cover the large cells. The spindle cells may be either connective tissue cells or regenerating cells of the germinal epithelium. Mitoses are seen in spindle cells as well as in the large cells and in the capillaries and in the connective tissue of the albuginea near the place of rupture. In the connective tissue near the place of rupture red blood corpuscles are still present. The central cavity of the new follicle begins to enlarge; it is larger in the one follicle than in the other. Both corpora lutea are protruding over the surface of the ovary. No boundary line is visible between granulosa and theca interna; the cells of both layers show the same character. The number of cell layers and the size of the cells of the corpus luteum are not markedly different from those of former stages. The central granulosa cells are still vacuolar. From the neighborhood of the blood vessels of the former interna tubes are formed by two parallel layers of drawn-out, spindle-shaped cells, and extend into the former granulosa about half way from the central cavity or still further. The direction of these tubes is radial. In the endothelial cells of the former theca interna, which are often very large, mitoses are present; mitoses are likewise seen in cells lying directly in contact with the endothelial cells. In the theca interna and externa many leucocytes are seen, which stain strongly with eosin. The blood vessels of the theca interna and of the surrounding connective tissue are much dilated. Some old corpora lutea are present in these ovaries.

16. *At Twenty-four Hours After Copulation* (Celloidin).—A small prominence of the follicle is visible at the place of rupture. The follicle is closed by the granulosa; the granulosa at the place of rupture is covered by cells, which may be either connective tissue cells or cells of the germinal epithelium. The germinal epithelium, however, has certainly not yet completely regenerated. Only little blood extravasation is present at the place of rupture. The central cavity of the follicle is closed. The theca interna and granulosa can not very well be distinguished. Mitoses are present at the border between the two layers, and it is difficult to recognize to which of those two layers the mitoses belong. Blood vessels are only found in the outer zone of the follicle; they are not very dilated. No connective tissue or blood vessels are visible in the former granulosa.

17. *At Twenty-five Hours After Copulation* (Paraffin).—The cavity of the corpus luteum is much larger. Pressure is exerted on the cells which line the cavity; they are flat. The number of cell rows or the size of the cells is not markedly changed. No line of demarcation between the granulosa and theca interna can be seen. The blood vessels of the theca interna are much dilated. Mitoses are present in the endothelial cells of the capillaries. Mitoses are also present in the long-drawn out cells which invade the granulosa. The tubes formed by these cells are occluded presumably by the pressure which is exerted by the fluid present in the central cavity. No blood is to be found in these tubes. The pressure exerted from the central cavity is probably also the cause that these rows of new-formed cells do not run in an absolutely radial direction, but in a more oblique way.

18. *At Twenty-eight and One-Half Hours After Copulation* (Celloidin).—Ruptured follicles are prominent over the surface of the ovary at the former place of rupture. The place of rupture is covered by large cells (former granulosa and interna cells) with blood vessels. Spindle cells are also present, which perhaps are regenerating cells of the germinal epithelium. Near the place of rupture mitoses are seen in the albuginea and also in the endothelial cells of the blood vessels. The central cavity is not large and contains a red-staining, granular substance. No line of demarcation between granulosa and theca interna is visible. In the direct neighborhood of the theca interna of the developing corpus luteum, blood vessels are dilated and mitoses are present in the endothelial cells. The capillaries in the peripheral part of the corpus luteum (in the former theca interna) send out processes toward the central cavity. These capillaries do not yet penetrate deeply into the corpus luteum. Mitoses are present in the endothelial cells of these capillaries and also in many cells in the direct neighborhood of the capillaries. It is sometimes difficult to decide whether or not such mitoses belong to endothelial cells. Mitoses are also present in the former granulosa, in cells which have the appearance of granulosa cells, which may nevertheless be immigrated cells. Besides distinct capillaries, we see spindle-shaped cells penetrating into the granulosa. These spindle-shaped cells may in part at least also represent advancing endothelial cells of capillaries. At some places the tubes formed by the ingrowing spindle-shaped cells (endothelial cells) may extend much further into the corpus luteum. The central part of the corpus luteum, near the central cavity, is free from such cells. The direction of the ingrowing cells is a radial one. In the outer part of the developing corpus luteum many polynuclear leucocytes which stain deeply with eosin are seen. Some karyorrhexis and karyolysis are visible in the cells lying in the central cavity. Three developing corpora lutea.

19. *At Thirty-one Hours After Copulation* (Paraffin).—The corpora lutea are closed; the place of rupture is covered by large cells of the character of granulosa and the large theca interna cells and by regenerating cells, which are probably derived from the germinal epithelium. In one of the developing corpora lutea the follicle forms a marked prominence over the surface of the ovary, the prominence consisting mainly in connective tissue rich in blood vessels. The central cavity has increased in size, cells which have the appearance of detached granulosa cells, which show karyolysis and become dissolved are visible in the central cavity; occasionally a string of cells becomes necrotic. A marked tension seems to exist in the central cavity. The cells lining this cavity are stretched very markedly. No distinction exists between granulosa and theca interna. Dilated blood vessels are visible at the border between theca externa and the developing corpus luteum. In the outer part of the latter, capillaries are seen. Mitoses are present in the endothelial cells of these vessels, as well as in the vessels at the border of the theca externa. Mitoses are also seen in cells in the close neighborhood of the capillaries. From these capillaries or from their neighborhood tubes are growing deeper into the former granulosa. In two of the developing corpora lutea these tubes remain open until they almost reach the central cavity; in the third they are not open so far. Mitoses are also seen in the cells of these tubes. The latter do not run entirely radially, but obliquely, and they frequently turn in a horizontal direction at the inner end. At one place a cell tube, which is without doubt a blood vessel, penetrates almost to the central cavity. In that corpus luteum

in which the cell tubes remain open, the course of the latter is more radial than in the other corpus luteum. One old corpus luteum is present.

20. *At Thirty-two and One-Half Hours After Copulation* (Paraffin).—The cavities found in this corpus luteum are very similar to those seen in the corpus luteum of the preceding stage. The developing corpus luteum is closed mainly through the granulosa cells, which occlude the former place of rupture. They are covered by cells, which are probably derived from the germinal epithelium. The similarity between the large granulosa cells and the regenerated cells of the germinal epithelium, which probably cover the wound, is, however, so great that it is impossible to distinguish with certainty between these two kinds of cells. Some of the covering cells degenerate. The connective tissue near the place of rupture is very rich in enlarged blood vessels, whose endothelial cells are frequently seen to be in mitotic division. Some extravasated blood can also be found here. The corpus luteum is not prominent in this ovary; in this case a retraction of the ovary is found at the former place of rupture. The central cavity is large and it contains a little blood; some cells are disintegrating in the central cavity. Granulosa and theca interna can not be distinguished. Mitoses are found in cells of theca externa and in endothelial cells of the capillaries. At places the blood vessels of the theca externa are very much dilated and the surrounding tissue is edematous. The cells which surround the central cavity are arranged in a concentric manner. The central granulosa cells are vacuolar and small; it appears as if the exudate present in the central cavity, by means of the pressure exerted by it, separated these cells. Cell tubes are extending from the periphery of the developing corpus luteum into the central part. In part they almost reach the central cavity. Others turn around at different heights. Some of these tubes are wide open; most of them are closed and seem to be compressed. In one developing corpus luteum they run in a radial direction, in the other their direction is more oblique. Mitoses are present in the endothelial cells of the blood vessels and in the cell tubes, which in all probability represent new-formed capillaries, although some of them may be ingrowing connective tissue. The cells of these tubes which are in mitotic division are sometimes found in the lumen of the tube; in other places at the outer side, and it is not always possible to exclude with certainty that a neighboring cell is in mitotic division. In the developing corpus luteum other mitoses are visible without any apparent connection with the capillaries. The capillaries in the outer part of the corpus luteum are much dilated, and they run in horizontal direction. An old corpus luteum is present.

21. *At Thirty-four Hours After Copulation* (Paraffin).—The place of rupture is covered by germinal epithelium, which, however, does not yet provide a perfect covering. The follicle forms a small prominence at the former place of rupture. The blood vessels near by are dilated. At one place the blood vessels of the theca externa are dilated and the tissue around these vessels is edematous. The capillaries in the neighborhood of the developing corpus luteum are dilated. In the capillaries of the young corpus luteum mitoses are present, even near the central cavity. At various points cell tubes, which are probably newly formed capillaries, give off branches; the cell tubes may split in several branches. The cells lining the central cavity are flat, perhaps as a result of the pressure exerted by the fluid in the central cavity.

22. *At Thirty-six Hours After Copulation* (Celloidin).—The central cavity is much enlarged. The fluid filling it seems to exert a strong pressure on the corpus luteum. The corpus luteum represents a vesicle with a relatively thin wall traversed in a radial direction by cell tubes and spindle-shaped cells, which latter, perhaps, are connective tissue cells. Mitoses are frequent, especially in the outer part of the corpus luteum; they are, however, also present in the inner half near the central cavity. They can be found in endothelial cells and in the spindle-shaped cells of the corpus luteum. They are also present in the direct neighborhood of the endothelial cells. A part of the capillaries run in a horizontal direction. The cells surrounding the central cavity are flat. They are probably granulosa cells, although it can not be excluded with certainty that they are immigrated connective tissue cells. No line of demarcation exists between granulosa and theca interna.

23. *At Thirty-eight and One-Half Hours After Copulation* (Paraffin).—The corpora lutea protrude somewhat over the surface of the ovaries at the place of the former rupture. Long drawn-out cells, which are probably regenerating cells of the germinal epithelium, cover this prominence. The central cavity of the corpus luteum is very large. The shape of one corpus luteum is markedly irregular; protrusions of the corpus luteum into the surrounding tissue are formed. No demarcation exists between theca interna and granulosa. In the outer half open capillaries are present; they run radially or horizontally. In the inner half open tubes are also present, but frequently no lumen can be seen between the rows of spindle cells, which grow into the inner half and which may split in different directions. At one place large capillaries traverse almost the whole thickness of the corpus luteum. Mitoses are present in the endothelial cells of the capillaries and in cells lying in contact with the capillaries. The majority of the mitoses are found in the outer half. There are, however, mitoses present near the inner cavity. The cells of the outer half of the corpus luteum are different from the more centrally situated cells, insofar as the latter are more vacuolar than the former. Two old corpora lutea are present.

24. *At Forty-nine and One-Half Hours After Copulation* (Celloidin).—The corpora lutea are closed; they form small prominences over the surface of the ovary. The wound at the place of rupture has healed. It is covered by cells of the germinal epithelium, which have not yet regained their normal shape, but are still long drawn out. Beneath the germinal epithelium connective tissue of the albuginea is found. The central cavity is larger than at the former stage; new liquor folliculi is present. Spindle-shaped cells line the peripheral part of the central cavity. It is not certain that all of these cells are connective tissue cells; some may be granulosa cells drawn out by the pressure exerted by the liquor folliculi. Some of these cells become transformed into fibers. Leucocytes are present in the central cavity. Parallel rows of spindle-shaped cells, the majority of which are probably new-formed endothelial cells of capillaries, traverse the corpus luteum; they may penetrate to the central cavity or they may form loops enveloping groups of lutein cells. The direction of these capillaries is not entirely radial; they run in part in a horizontal direction, which is perhaps due to the pressure exerted by the liquor folliculi. Many mitoses are found in the endothelial cells and in cells in their immediate neighborhood. A part of the invading spindle-shaped cells may be connective tissue cells.

25. *At Fifty and One-Half Hours After Copulation* (Paraffin).—The corpora lutea are closed and covered by germinal epithelium. The latter cells are still spindle-shaped. Beneath the germinal epithelium the connective tissue of the albuginea covers the former place of rupture. One corpus luteum protrudes only slightly over the surface of the ovary, the other somewhat more. The central cavity is still present, although somewhat encroached on by connective tissue which envelops the central part of the cavity in concentric layers. The blood vessels pass through the whole corpus luteum so that at such a place very little or no lutein tissue is left. The outlines and shape of the corpus luteum may become very irregular, probably as a result of this ingrowth the corpus luteum of blood vessels forms irregular protuberances into the surrounding connective tissue. Probably because of the better blood supply the character of the corpus luteum cells changes; they are less vacuolar and stain well with eosin. The capillaries are still partially compressed; they run either radially or bend over into a horizontal direction; they may also split into two branches at different levels, even near the central connective tissue. They penetrate into the central connective tissue. Probably as a result of this new formation of capillaries a small hemorrhage with many leucocytes is found in the central cavity. A new formation of capillaries has apparently likewise taken place in the theca externa at a place where the latter protrudes into the corpus

luteum. Many mitoses can be seen in the endothelial cells of the capillaries in all parts of the corpus luteum, near the border of the theca externa as well as near the central cavity. Mitoses are also present in cells which are in direct contact with the capillaries. An endothelial cell in mitotic division may, with its fusiform ends, overlap neighboring endothelial cells. Mitoses are likewise seen in the cells of the connective tissue which fills the peripheral part of the central cavity. The large majority of all mitoses are certainly in endothelial cells. It sometimes appears as if the connective tissue cells of the central connective tissue might be derived from the endothelial cells of the capillaries. It is, however, not possible to prove it. Both corpora lutea have about the same character. Some old corpora lutea are present.

26. *At Sixty Hours After Copulation* (Celloidin).—Two corpora lutea of the same character are present. The periphery of the central cavity is filled by connective tissue and new-formed capillaries which penetrate into the connective tissue from the corpus luteum tissue proper. The latter is traversed by capillaries, mostly in a radial direction. The cells of the corpus luteum are somewhat larger than at earlier stages and stain well. The new-formed blood vessels have probably a favorable effect on the character of the lutein cells. Many mitoses are present in endothelial cells of the capillaries in different parts of the corpus luteum, and also in other cells which are probably lutein cells. Mitoses are also present in the connective tissue cells of the central cavity. Hemorrhages are seen in the central cavity and in the connective tissue of the central cavity probably as a result of the intrusion of new capillaries in the central cavity.

27. *At Seventy-four and One-Half Hours After Copulation* (Paraffin).—The corpora lutea are not much larger than in the former stage. The central cavity is not yet entirely filled out by connective tissue, which latter is arranged concentrically in the peripheral part of the central cavity. The corpus luteum cells are well formed. The cell membrane is distinct. Some vacuoles appear in cells, which are large and assume the character of typical lutein cells. Mitoses are present in endothelial cells of the capillaries and in cells near capillaries which are probably lutein cells. Mitoses are also visible in the central connective tissue. Many polynuclear leucocytes are found in the corpus luteum.

28. *At Seventy-seven and One-Half Hours After Copulation* (Celloidin).—The central cavity is almost entirely filled by connective tissue. Mitoses are seen in capillaries of the central connective tissue. The corpus luteum cells are larger than in former stages and are well formed. The corpus luteum as a whole is also larger. No distinction exists between granulosa and theca interna. Many capillaries traverse the corpus luteum. Mitoses are present in the endothelial cells of the blood vessels and also in cells near the capillaries. Such cells are probably lutein cells. Mitoses in lutein cells are found in the central as well as in the peripheral parts of the corpus luteum. Such mitoses may cause a protrusion of the endothelial cells of the capillaries.

29. *At One Hundred and One-Half Hours After Copulation* (Celloidin).—The central cavity is filled by connective tissue. In this connective tissue capillaries are present. The corpus luteum proper is relatively large, the central connective tissue at the place of the former central cavity occupies only a relatively small area. The corpus luteum cells are large and show well-formed vesicular nuclei. The cytoplasm is somewhat spongy; it stains purple with hematoxylin and eosin. Mitoses are present in endothelial cells of capillaries, as well as in lutein cells. One corpus luteum still protrudes somewhat over the surface of the ovary. The connective tissue covering the former place of rupture is compressed so that the typical albuginea has not yet been restored. Polynuclear leucocytes are present in the peripheral part of the corpus luteum. The character of a typical corpus luteum has been acquired.

30. *At One Hundred and Twenty-seven Hours After Copulation* (Celloidin).—The corpus luteum is typical. Large capillaries traverse the corpus luteum. The central connective tissue is small in quantity. The lutein cells stain well (purple). No mitoses can be seen. The corpus luteum forms many irregular protrusions into the surrounding tissue.

DISCUSSION OF RESULTS.

1. Ovaries of thirty guinea-pigs were examined. The ovaries of two animals showed no ruptured follicle. In one of these cases, six hours after copulation, the time elapsed after copulation had perhaps been too short for the rupture to take place. In the other the ovaries were examined nine hours after copulation and some hyperemia was found, but there was no indication that a follicle was near rupturing.

2. One of the questions most discussed is: Is the granulosa preserved after the rupture of the follicle, and does it take part in the formation of the corpus luteum? It can be stated with certainty that the granulosa remains preserved and takes part in the formation of the corpus luteum. A distinct defect in the granulosa can be noticed at the place of rupture nine and eleven and one-half hours after copulation. The cells are on the whole well preserved; in part they show some vacuoles. From twelve and one-half hours on, the defect in the granulosa is no longer visible, as the granulosa cells which surround the place of rupture form one continuous layer. The vacuolar character is especially noticeable in the centrally-situated cells. From fifty to sixty hours on, the lutein cells become somewhat larger and stain well. On the fourth day the cells show the typical appearance of the lutein cells. On the fifth day we see typical lutein cells with well-formed vesicular nuclei. The cytoplasm is spongy and it stains purple with hematoxylin and eosin. The change in the character of the cells seems to coincide with the penetration of the blood vessels into the former granulosa. When the whole corpus luteum is supplied with a network of capillaries the cells seem to get larger and to stain better.

3. Nine hours after copulation, a short time after the rupture has taken place, a part of the granulosa on the surface of the ovary is seen extending through the place of rupture into the peritoneal cavity. This is a frequent occurrence and tumors are not known to originate from such displaced cells. After twelve and one-quarter hours liquor folliculi penetrates through the place of rupture into the peritoneal cavity instead of granulosa; the place of rupture is now closed and internal pressure causes the granulosa to protrude partially into the cavity of the follicle. That can be seen seventeen hours fifty minutes after copulation.

4. Not all the granulosa cells remain alive. In the first hours after the rupture, and as late as eighteen hours after copulation, a number of centrally-situated granulosa cells show karyorrhexis and disappearance of their nuclei, followed by dissolution of the cells. At twenty hours we see some karyorrhexis at the border between the granulosa and theca interna, and as late as twenty-eight and one-half hours and thirty-one hours karyorrhexis and karyolysis and dissolution of some cells take place.

5. At an early period after the rupture some granulosa cells are long drawn out in the direction of the place of rupture. It appears as if traction were exerted on the cells in that direction. A number of such cells may degenerate, lose their nuclei and form fibers which stain red by eosin. A part of the red-staining mass which is present in the central cavity is therefore a direct product of degenerating cells.

6. In a similar way the viscid red-staining mass which fills the cavity of the follicle can be drawn out into fibers nine and twelve hours after copulation. At an early period after the rupture a red-staining, homogeneous mass or a somewhat granular material is still

present in the central cavity. From forty-nine and one-half hours on the liquor follicule is increasing again.

7. As stated, a number of granulosa cells are lost after the rupture of the follicle. To compensate for this loss mitotic divisions take place in granulosa cells. One mitosis is visible near the place of rupture eleven and one-half hours after copulation. At twelve and one-half hours we see a number of mitoses, diasters and monasters, in all layers of granulosa. The diasters are drawn out as the cells are drawn out—toward the place of rupture. At seventeen hours fifty minutes we see mitoses in different parts of the granulosa. In other specimens mitoses can be seen at the margin of granulosa and theca interna, and it is difficult to be sure whether some mitoses lie in the outer part of the granulosa or in the inner part of the theca interna. At twenty-six hours and at later stages we see mitoses in the cells which invade the granulosa from the theca interna. At twenty-eight and one-half hours we see in the area of the former granulosa mitoses in cells which may have been granulosa cells, but which possibly were immigrated cells. No mitoses could be seen in the granulosa nine, ten, eleven and twelve hours after copulation.

8. Soon after the rupture of the follicle, nine and ten hours after copulation, the boundary line between granulosa and theca interna form folds. At eleven hours the theca interna forms protrusions into the granulosa at some places. At eleven and one-half hours two parallel rows of fusiform cells are seen at one place to extend into the granulosa from the theca interna; at fifteen and one-half hours and seventeen hours fifty minutes the border between granulosa and theca interna is wavy. The theca interna cells may be drawn out in the same direction as the granulosa cells.

9. Soon after the rupture of the follicle the theca interna is very hyperemic. This condition is marked until fifteen hours after copulation. From twelve hours up to thirty hours the blood and lymph vessels near the place of rupture are dilated. The hyperemia extends to the connective tissue surrounding the place of rupture, especially to the albuginea. From twenty-two hours on, the blood vessels of the theca externa become dilated and the hyperemia passes to the connective tissue directly surrounding the corpus luteum. The hyperemia is quite marked thirty-one and thirty-four hours after copulation. This change in the area of hyperemia from theca interna to theca externa is perhaps due to the pressure exerted in the corpus luteum itself after the rupture has been closed more firmly.

10. Mitoses in the theca interna can be seen soon after the rupture up to the time when the theca interna and the granulosa can no longer be distinguished in the corpus luteum. From nine to twenty-four and thirty-one hours mitoses can be seen near the granulosa as well as in the peripheral part of the theca interna, in endothelial cells and in interna cells proper at the side of the capillaries. It is not possible in each case to decide with certainty whether a mitosis belongs to an endothelial cell or to a cell lying in close proximity to an endothelial cell. Mitoses in endothelial cells are present as early as eleven and one-half hours after copulation and can be seen at different periods up to thirty-two and one-half hours; at that time one can only approximately determine which part of the vessels belongs to the former theca interna and which belongs to the former granulosa. Between twenty and thirty hours mitoses are present near the place of rupture in endothelial cells as well as in other cells.

11. In the theca externa mitoses can also be seen in endothelial cells of blood vessels as well as in connective tissue cells. They are present twelve and one-quarter and twelve and one-half hours after copulation. The larger number of mitoses is visible in the theca externa, and in the blood vessels of the theca externa between twenty and thirty-two and one-half hours, perhaps in connection with the hyperemia which is more marked here at that period. At a later period, fifty and one-half hours after copulation, capillaries seem to be newly formed in the theca externa, and these capillaries enter the corpus luteum.

12. A number of cells of the theca interna become large and polygonal and can no longer be distinguished from the granulosa cells. At some places such cells can be seen between the blood vessels ten, eleven and twelve and one-half hours after copulation. The endothlial cells of capillaries may likewise swell. The interna cells assume more and more this character, and if the blood vessels of the interna run in a radial direction toward the granulosa, both layers are in part or in their entirety indistinguishable. At seven and one-quarter hours both layers can still be easily distinguished. From nine hours to twenty hours in many cases the line of demarcation can be made out. At fourteen and three-quarter hours they can, for instance, easily be distinguished where the theca interna cells and their blood vessels show a concentric arrangement to the follicle. At twenty hours a zone, which is very poor in nuclei, separates both layers. Where the direction of the capillaries is a radial one the distinction between the two layers is no longer possible. Both layers take part in the formation of the corpus luteum.

13. Mitoses in blood vessels of the theca interna can be seen very early after the rupture of the follicle. Twenty hours after copulation the blood vessels of the theca interna have a radial direction in some places. Twenty-two hours after copulation, tubes, formed by two parallel layers of spindle-shaped cells and with a radial direction, extend from the neighborhood of the blood vessels of the former interna half way or further into the former granulosa. At twenty-four hours we see blood vessels only in the outer zone of the follicle. At twenty-six hours cell tubes enter the former granulosa. At twenty-eight and one-half hours we see capillaries in the peripheral part of the corpus luteum (the former theca interna) sending out processes toward the central cavity. Cell tubes extend at some places far into the corpus luteum, the central part near the central cavity remaining free from capillaries. The direction is radial. At the same time we see spindle-shaped cells which represent endothelial cells of capillaries or perhaps connective tissue cells entering the former granulosa. At thirty-one hours capillaries are present in the outer part of the corpus luteum. From these outer capillaries or from their neighborhood cell tubes are growing deeply into the former granulosa. In two of the corpora lutea these tubes preserve a distinct lumen until they almost reach the central cavity and their course is radial; in the third corpus luteum they do not remain open so far and their course is more oblique. At the central end the cell tubes turn frequently in a horizontal direction. Between thirty and forty hours such cell tubes traverse the corpus luteum either radially or obliquely. They have a lumen in the outer part of the corpus luteum. In the inner half open tubes are also present, but frequently no lumen can be seen between the rows of spindle cells. The rows of spindle cells give off branches which run obliquely or horizontally and begin to en-

velop the corpus luteum cells. Besides the distinct cell tubes we see spindle-shaped cells without apparent connection with such cell tubes. As early as thirty-eight and one-half hours after copulation at one place large capillaries traverse almost the whole thickness of the corpus luteum. At forty-nine and one-half and at fifty and one-half hours capillaries pass through the corpus luteum to the central cavity. In the connective tissue which is present in the peripheral part of the central cavity the tubes may lose their lumen. These capillaries may split into two branches at different levels, even near the central connective tissue. At some places the blood vessels and connective tissue pass directly from the theca externa through the whole corpus luteum in a radial direction into the central tissue. At such a place very little corpus luteum tissue is left. At sixty hours and later many well developed capillaries pass through the corpus luteum.

Two questions arise: Are the spindle-shaped cells invading the granulosa, endothelial cells of capillaries, or are they in part ordinary connective tissue cells; and what is the origin of these cells? We see that these cell tubes originate near the capillaries of the former theca interna. The endothelial cells of the latter show at the same time mitoses. These facts make it probable that at least a great part, perhaps all, of these tubes are derived from the blood vessels of the theca interna. The fact that a lumen is not present in all cell rows might be explained by the pressure exerted at certain stages of the developing corpus luteum from the direction of the central cavity toward the periphery. Nevertheless it is likely that a part of the spindle-shaped cells are connective tissue cells, but I could not find any definite indication that the ordinary theca interna or theca externa cells infiltrate the granulosa. This fact, however, does not exclude the possibility that nevertheless such an infiltration might take place. At a later stage we see blood vessels and connective tissue pass from the theca externa to the central part of the corpus luteum.

14. Between thirty and forty hours mitoses are found in the newly-formed cell tubes of the corpus luteum. They are present in the central, and more frequently, in the peripheral part of the corpus luteum. Mitoses are also found in spindle-shaped cells which do not distinctly belong to the cell tubes, and in cells which lie in close approximation to the cell tubes. Not in every case is it possible to state with certainty whether a mitosis is seen in a cell belonging to the tubes described above or to a lutein cell lying near it, because during mitotic division the endothelial cells may change somewhat their position; they may protrude toward the lumen of the cell tubes as well as toward the outer side.

From fifty to sixty hours in all parts of the corpus luteum many mitoses can be seen in endothelial cells and in cells which are situated between the capillaries. These latter cells are probably lutein cells. Mitoses are also present in the connective tissue of the central cavity. The same conditions prevail up to 100 hours after copulation. At 127 hours mitoses are no longer visible.

15. The place of rupture of the follicle is open in the first few hours. It becomes occluded by granulosa cells twelve and one-half hours after copulation. Six hours later we find between the occluding granulosa cells a homogeneous mass which stains red with eosin. Perhaps some liquor folliculi was pressed out through the granulosa, or it is possible that it was formed through the degeneration of some granulosa cells. Between twenty-two and thirty hours we find the place of rupture occluded by larger corpus luteum cells which contain capillaries. These large cells again are covered by spindle-shaped cells which may be in part at least regenerating cells of the germinal epithelium; there were perhaps connective tissue cells admixed. Mitoses can be found in the endothelial cells of the blood vessels as well as in the large cells.

Mitoses are also present in the connective tissue of the albuginea near by. Between thirty and forty hours no marked change takes place; the regeneration of the germinal epithelium becomes more marked, mitoses still occur and the surrounding connective tissue is hyperemic. The covering of the albuginea is, however, not yet perfect. About fifty hours after copulation the regenerating cells of the germinal epithelium are in part still somewhat spindle-shaped; beneath them the connective tissue is visible.

We have to assume that the first temporary occlusion by granulosa cells is caused by the pressure of the ovarian tissue surrounding the follicle, only somewhat later an actual wound healing takes place and leads to a solid closure of the opening.

16. That a pressure of the surrounding ovarian tissue is exerted on the ruptured follicle is perhaps also indicated by the fact that after eleven and one-half hours we find a more or less marked prominence of the ruptured follicle over the surface of the ovary. It is quite marked twenty-two hours and thirty-one hours after copulation. It is, however, not necessarily always present. We find even a retraction at the place of rupture thirty-two and one-half hours after copulation.

17. After the rupture of the follicle a small cavity remains preserved in the center of the follicle. As soon as the granulosa covering of the follicle becomes stronger and with the simultaneous ingrowth of capillaries the cavity begins to enlarge, slowly from twenty-two to thirty hours after copulation, more rapidly between thirty and forty hours. At forty-nine and one-half hours the cavity is large, new liquor folliculi is formed, and connective tissue becomes visible in the peripheral parts of the central cavity. At seventy-seven and one-half hours the cavity is almost entirely filled by connective tissue. At 100½ hours the central cavity is entirely filled by connective tissue which contains capillaries.

18. The increase in the size of the central cavity, combined with the increase in the quantity of the liquor folliculi, seems to exert a pressure on the structures surrounding the central cavity. This is indicated, for instance, by the flattening of the centrally situated granulosa cells, which is noticeable twenty-six hours after copulation. From now on flattened cells line the central cavity. At first they are in all probability granulosa cells. The flattened cells are probably granulosa cells between thirty and forty hours, although at that period connective tissue cells may be admixed. After fifty hours we have to deal mainly or exclusively with connective tissue cells. As indications of pressure exerted by the fluid of the central cavity may perhaps be considered the fact that at early periods the cell tubes traverse the corpus luteum, frequently not in a directly radial, but in a more oblique direction, and that from twenty-six hours on the blood seems to be pressed out of the vessels of the corpus luteum proper into the surrounding connective tissue for a certain period. This interpretation, however, is only a tentative one.

19. It is an interesting fact that the connective tissue which fills gradually the central cavity grows along the border of the cavity in a concentric direction and that in this way it gradually fills the central cavity. Mitoses can be seen in the connective tissue cells of the central

cavity at different periods, for instance, fifty and one-half and seventy-four and one-half hours after copulation. Cell tubes and distinct capillaries grow into it. At fifty and one-half hours cell tubes can be seen, and at sixty hours distinct capillaries are visible. Mitoses are also found in endothelial cells of capillaries. It is uncertain whether the mode of ingrowth of connective tissue is due to contact irritability of the connective tissue or to the pressure exerted by the fluid of the cavity.

20. At various periods the developing corpora lutea show a very irregular shape and they form protrusions into the surrounding connective tissue. Corpora lutea of that character were visible at thirty-eight and one-half hours, at fifty and one-half hours and 100½ hours. In one case (at fifty and one-half hours) it appeared as if the ingrowth of large blood vessels from the theca externa had caused those irregular formations.

21. The rupture of the follicle seems to be accompanied by very little hemorrhage. In a number of follicles we see a slight amount of extravasated blood in the connective tissue near the place of rupture as late as thirty-two hours after copulation. In some follicles we see a small number of red blood corpuscles in the central cavity eleven, twelve and fifteen and one-quarter hours after copulation. Later, at fifty and one-half hours and at sixty hours we see slight hemorrhages in the central cavity. This blood has, however, probably a different origin and is in all likelihood extravasated from the new-formed blood vessels of the corpus luteum.

22. Polynuclear leucocytes are seen in the central cavity, and in the theca interna soon after the rupture of the follicle, in variable numbers. The leucocytes in the central cavity take up the eosin to a much less degree than the leucocytes which have just left the vessels. Later, at forty-nine and one-half hours and fifty and one-half hours, we see leucocytes in the central cavity. Their presence is in part due to hemorrhage from the new-formed vessels.

23. The size of the corpus luteum and of the individual cells does not increase much at early stages of the developing corpus luteum. At seventy-seven and one-half hours, however, the corpus luteum begins to become distinctly larger and at 100½ hours the central connective tissue occupies a relatively small area as compared to the lutein tissue proper.

24. We found that the large theca interna cells and the granulosa cells assume the same appearance in the ruptured follicle of the guinea-pig. We are, therefore, unable to distinguish between the two kinds of cells composing the corpus luteum after development has advanced to a certain stage. We can state that the large cells which are characteristic of the corpus luteum are derived from two different sources, namely, from the granulosa and from the theca interna. Although these two varieties of cells can not be distinguished morphologically after the corpus luteum has been formed, we can not say with certainty that there might not exist some chemical or physicochemical differences. We have, however, no indications of the presence of such differences, which become especially doubtful as we know that both the large cells of the theca interna as well as the granulosa cells may contain lutein, and that both may show the same tendency to fatty changes.

25. If we now compare the formation of the corpus luteum with the atresia of the follicles we see two principal differences between the development of these two structures. (*a*) During the atresia of follicles the granulosa degenerates entirely; in the corpus luteum it remains preserved and the cells increase in size and in number. A number of granulosa cells degenerate, however, even in the follicle which has ruptured. (*b*) In the atretic follicle the ingrowth of connective tissue predominates. A new formation of blood vessels does not take place, or is only very slight. In the corpus luteum, on the other hand, the new formation of blood vessels and their ingrowth into the former granulosa, and even into the central connective tissue, is very prominent.

For a further deeper analysis of these differences of growth, experimental investigations will be necessary.

A PHYSICO-CHEMICAL THEORY OF FERTILIZATION.*

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INTRODUCTION.

Within the last few years our conceptions of the physical state of protoplasm have undergone a series of changes in consequence of which a number of long-debated physiologic problems have been settled. No one advance has contributed nor promised to contribute more toward the understanding of certain cell phenomena, both from their morphologic and physiologic aspects, than the recognition of the colloidal nature of protoplasm.

It is our purpose in the following pages to show, if possible, that the fertilization of the ovum by the spermatozoön represents another cell process which finds its explanation in the colloidal nature of the egg protoplasm, and it is to the arguments which point in this direction that we wish to call attention. As it is impossible in the limited time allowed to meet all the various criticisms which might be raised against our theory of fertilization, we would refer the interested listener to our earlier and more extensive paper on this subject where the effort to meet these objections has been made.[1]

As any adequate theory of fertilization must be applicable not only to the normal process of fertilization of the ovum by a spermatozoön, but also to parthenogenesis both natural and artificial, it may not be amiss to give here a table of the various kinds of fertilization with which we are thus far acquainted.

I. Normal Fertilization. (Egg and spermatozoön both present.)
  1. Normal egg and normal spermatozoön.
  2. Normal egg and incomplete speratozoön.
  3. Egg without nucleus and normal spermatozoön.
  4. Polyspermia.

II. Parthenogenesis. (Egg without the spermatozoön).
  1. So-called natural parthenogenesis, combined with such external conditions as increase in temperature, freezing, desiccation, etc.
  2. Artificial parthenogenesis.
    A. Through withdrawal of water: osmotic fertilization through electrolytes and non-electrolytes.
    B. Through specific chemical methods:
      (*a*) Through salts.
      (*b*) Through acids (organic and inorganic).
      (*c*) Through alkalies.
      (*d*) Through other chemicals (alcohol, ether, chloroform, alkaloids, perhaps colloidal substances, etc.).
    C. Through changes in temperature.
    D. Through mechanical means (shaking, brushing, squirting, etc.).

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. Fisher and Ostwald: Pflüger's Archiv f. d. ges. Physiologie, 1905, cvi, p. 229.

DEFINITION OF THE TERM FERTILIZATION.

As the conception of fertilization is as various as the number of authors who have written on the subject, it becomes necessary for us first of all to define this term. In doing so we have to distinguish between a physiologic and a morphologic definition. The majority of definitions are of the latter kind. If we try to give a physiologic definition of the function of spermatozoön, we can say that it causes the egg to develop. With the other functions of the spermatozoön, such as its power to transmit the characteristics of the male, we have nothing to do. Physiologically, fertilization may, therefore, be defined as the impulse to development.

It is more difficult to give a morphologic definition of fertilization. Normally, this process consists in the entrance of a spermatozoön into the egg. The entire spermatozoön is, however, not necessary, for as soon as this cell has entered the ovum, the function of the tail-piece is at an end. Only the head and middle are of importance in causing the development of the egg. Of these two the head-piece grows steadily larger, becomes vesicular, and, as the male pronucleus, ultimately coalesces with the female pronucleus. Experiment has shown, however, that the head of the spermatozoön is by no means necessary in order to bring about the development of the egg, for by the proper methods it can be kept quiescent inside the ovum, and development nevertheless takes place. The power of bringing about the development of the ovum resides under normal circumstances in the middle piece of the spermatozoön. If we follow the history of this part we find that shortly after the entrance of the spermatozoön into the ovum the middle piece becomes surrounded by a light area which grows steadily in size and becomes very conspicuous, in that the granules of the egg protoplasm arrange themselves radially about it. We recognize in this description the formation of the astrosphere, and as will become apparent later, with the formation of the astrosphere the specific processes of fertilization are at an end.[2]

It is self-evident that parthenogenetic development, both natural and artificial, must differ morphologically in many respects from normal fertilization. In one particular, however, all, both normally and artificially, parthenogenetic eggs show the same histologic structure as normally fertilized eggs, namely, in the formation of the astrospheres. It has been shown by Zoilson that in eggs which have been caused to develop parthenogenetically by artificial means every point of histologic similarity to normally fertilized eggs may be lacking save one, the formation of astrospheres. But in the very constancy of this structure we find another argument to show that the formation of the astrosphere is the most essential morphologic part of fertilization, and that it is it which gives the impulse of development to the egg.

We believe that we can show that all those methods which can be used to bring about the formation of an astrosphere in an egg or its development are such as can be employed to bring about the conversion of a liquid colloid or sol of the approximate constitution of egg protoplasm into a solid colloid or gel, and that conversely almost every method which physical chemistry has at its disposal to bring about the conversion of a sol into a gel, is or may be used to bring about the normal or artificial development of the ovum. Simple comparison of the table of fertilization methods given above with the list of methods given below, which may be employed to convert a sol into a gel, already points in this direction. It must not be thought, of course, that the gelation in the ovum occurs exactly the same way as the gelation of a sol in a test tube. Certain external conditions influence the process within the egg, which modify it somewhat. These external conditions which make the formation of the astrosphere a specialized gelation will be discussed further on. It will be seen in this discussion that the ordinary laws of colloids suffice entirely, to our minds, to explain even this specialized gelation. As the final and perhaps strongest argument for the correctness of our ideas we shall use the experimental results of Bütschli, Alfred Fischer and Rhumbler, whose work on the formation of artificial astrospheres in certain colloids, such as albumose, gelatin, agar-agar, etc., has well merited the astonishment and praise of the scientific world.

2. Boveri's Das Problem d. Befruchtung, Jena, 1902, p. 8.

PHYSICAL CHEMISTRY OF COLLOIDS.

According to most investigators, colloids differ from crystalloids, in that the former do not, on solution in water, form entirely homogeneous, that is to say, true solutions, but inhomogeneous ones. The colloid remains suspended in the solvent, or to put it more correctly, the colloidal solution represents a mixture of two substances, which are only partially miscible in each other. Between the typical colloids, on the one hand, which have practically no osmotic pressure, and do not alter the boiling or freezing point of the solvent in which they are suspended, and the typical crystalloids on the other, which possess all these properties to a most marked degree there are, of course, a large number of intermediate bodies, which lean more or less strongly toward one or the other of these divisions.

A colloid has the power of existing in two states, a so-called soluble or sol state, and an insoluble or gel state. When the colloid is in the latter condition it is often said to be coagulated, precipitated or gelatinized. Certain differences, no doubt, exist between these terms, and the physical states of aggregation which they represent, but as physical chemists still use the terms indiscriminately and synonymously, we shall do so, too.

The change from the sol state to the gel is determined by a number of external conditions. These are tabulated in brief below.

1. *Effects of Temperature.*—A colloidal solution is capable of existing in the sol plate only within certain limits of temperature. When these limits are exceeded the colloid passes from the sol into the gel state. In regard to their behavior toward changes in temperature we distinguish between two classes of colloids. There are those first of all which pass from the sol to the gel state when the temperature is increased to a certain point. To this class belongs, for example, egg albumin, which coagulates on heating. A second class of colloids made up of those which pass into the gel state through a decrease in temperature. To this class belong the ordinary gelatins, which become solid on cooling below a certain temperature. As an increase in the temperature will cause the gel in the latter case to return to the sol state, this class of colloids is spoken of as heat-reversible colloids in contrast to the former group in which a decrease in the temperature will not re-establish the liquid state of the colloids. Egg albumin is, therefore, a heat irreversible gel. In regard to the behavior of colloids toward other external conditions also, the process of gelation is said to be reversible or

irreversible. It is of interest to note in passing that a heat reversible colloid which has once passed into a gel can not be reconverted into a sol by only a slight increase in temperature above the point at which gelation occurred. Ordinarily, gelatin, for example, which gels at 0 C., does not become liquid again on heating until 26 C. is reached. Within the limits of temperature, which are of biologic importance, a heat reversible colloid, therefore, behaves as an irreversible one, a fact of importance in our further considerations.[3]

2. *Effects of Concentration.*—A colloid can exist as a sol only within certain limits of concentration. It has been shown by Gutbier and Resenscheck that a colloidal solution of gold is precipitated if the water is allowed to evaporate from it in a vacuum or under the influence of heat. It must not be forgotten, however, that the evaporation of the water is associated with an increase in the concentration of the electrolytes, which may be present as impurities in the colloidal gold. As the next paragraph will show these can by themselves bring about a precipitation of a sol if sufficiently concentrated, so that if not entirely responsible these electrolytes might at least aid in the precipitation of the colloid, the concentration of which was being raised by evaporation of the water holding the colloid in suspension. That the increase in the concentration of the colloid by itself plays an important rôle in its coagulation is shown, however, by the fact that a sol can be precipitated the more easily through some external agency the more concentrated it is.

3. *Effects of Salts.*—Sols can be converted into gels through the addition of salts. It has been shown by Hardy that the coagulating power of a salt is determined by the valency and the sign of the charge of its ions. The coagulating ion always has an electrical charge opposite to that of colloidal particle. In this way positively charged ions coagulate only negatively charged colloidal particles. The coagulating power of an ion increases with its valency, not in a simple proportion, but according to the following formula, in which R represents the valency and K the coagulating power:

$$R^{I}:R^{II}:R^{III}=K^{1}:K^{2}:K^{3}$$

What exceedingly small traces of salts suffice to bring about the coagulation of certain colloids may be imagined when we cite the fact that at 16 C. colloidal ferric hydroxid is precipitated by potassium sulphate when 1-gram molecule of the salt is present in 4,000 liters of water.[4]

4. *Effects of Acids and Alkalies.*—Acids, both organic and inorganic, and alkalies can also cause the coagulation of a sol, but as in the case of salts, their effect is dependent on the electrical change of the colloidal particles. Electro-positive particles are precipitated by alkalies and electro-negative ones by acids. Generally speaking, no amount of an acid will precipitate an electro-positive colloid, and no amount of an alkali will coagulate an electro-negative one.

5. *Effects of Non-Electrolytes.*—A large number of non-electrolytes are known which cause the coagulation of sols. We will mention here only ether, alcohol and chloroform which interest us particularly. The coagulating power of these substances is familiar to everyone from their daily use in physiologic chemistry for the precipitation of proteins, etc.

6. *Effects of Colloids on Colloids.*—One colloid may be used to coagulate another. In order that this may occur, however, it is necessary that the two have opposite electrical charges. If they are charged with the same kind of electricity they do not affect each other.

7. *Effects of Mechanical Agitation.*—One of the commonest means of bringing about the coagulation of a sol, and one which is in nearly all cases connected with the means given above for causing a sol to pass into the gel state, is mechanical agitation. It is a generally known fact that colloids to which, for example, a salt has been added, often require hours or days before coagulation sets in, but pass at once into the gel state if they are slightly shaken. In considering the effects of mechanical agitation it is to be remembered that it is the more effective the nearer the colloid is to the critical point; that is to say, the point at which the sol passes into the gel.

HISTOLOGIC STRUCTURES OF COLLOIDAL SOLUTIONS.

Having outlined the external conditions which determine the change from the sol state to the gel, we must discuss briefly the structures of colloidal solutions in these two states. Certain investigators believe that sols are optically homogeneous solutions. Mere microscopic examination is, however, sufficient to show that many sols are inhomogeneous, and, as has been shown by recent investigations, aided by the ultra-microscopic methods of Sidentopf and Zsigmondy, even those sols which were formerly considered homogeneous are, according to the more generally accepted opinion, really inhomogeneous. Sols represent suspensions of exceedingly finely divided insoluble particles. The size of individual particles varies not only in colloidal solutions of different substances, but even in sols of the same substance.

Gels differ markedly in structure from sols. It has been shown by the work of Fleming, Bütschli, Alfred Fischer and Hardy that most, if not all, coagulated colloids have either an open net, a honeycomb or a fibrillar structure in the spaces of which the liquid portion of the colloid is found. The fibrils or the meshes of the net or honeycomb are made up of the colloid containing but little solvent, while the interstices are filled with a liquid composed of the solvent and a little colloid. It is not without importance that the liquid filling the interstices is not composed of pure water, but contains some, even though it be only a small amount, of colloidal material.

The change from the sol state to the gel is characterized by a change in the special arrangement of the suspended particles. While in a sol the colloidal particles are distributed evenly through the solvent, they are clumped and arranged in rows when gelation occurs. This rearrangement of the suspended particles gives rise to the gel structure. Because of this approximation during gelation of the suspended particles, the latter are no longer able to hold as much solvent as before and fluid is given off. This separation of liquid usually evidences itself in an external separation of the solvent from the gel. A familiar illustration is found in the expression of the serum from coagulated blood, which represents the formation of a gel. At other times special means, such as slight pressure, are required to make the separation an apparent one.

Whether an open net or a honeycomb structure is formed is dependent on a number of circumstances. Most colloids give rise to an open-net structure, where they coagulate. Those colloids which are present in protoplasm and which coagulate to form a honeycomb structure (for example, gelatin) will produce an open-

3. Hardy: Jour. of Physiology, 1899, xxiv, p. 119.
4. Hardy: Loc. cit., p. 398.

net structure when not too highly concentrated. It seems probable, therefore, that in protoplasm these colloids also give rise to an open-net structure.

We have yet to discuss the origin of the fibrillar structure. This represents only a modification of the other two, and comes to pass when a certain external factor, a mechanical one, comes into play. A fibrillar structure is formed when gelation occurs under a directive stress. According to Bütschli, for example, a fibrillar structure can be produced in gelatins, which, under ordinary circumstances, show a honeycomb structure, if the colloid is stroked with a glass rod while cooling.

Also of interest in our further considerations is the time required for the conversion of a sol into a gel. Generally speaking, we can say that this change occurs very rapidly. By this is meant that when the external gel-producing agent, for example, the temperature, has reached the critical point, sol passes into the gel in an exceedingly short time or instantaneously.

THE PHYSICO-CHEMICAL NATURE OF FERTILIZATION.

We wish to show now that the formation of the astrosphere, or what amounts to the same thing, according to our definition, the process of fertilization, represents a gelation occurring under special conditions. In order to do this it must be shown first of all that the protoplasm of the normal unfertilized egg exists in the sol state. That the protoplasm of the egg represents a colloid or a mixture of colloid, we can now regard as settled. That this colloid or mixture of colloids exists in the sol state is rendered probable by the following morphologic and physico-chemical facts. The protoplasm of the unfertilized egg is stated by various observers to be either entirely homogeneous or finely granular. The coarser protoplasmic inclusions, such as oil droplets, etc., are, of course, not of importance in our discussion. The structure of the resting egg is, therefore, the same as that given above for the structure of sols in general. In apparent contradiction to this homogeneous or finely granular structure of protoplasm stands the observation of Bütschli that all protoplasm has a honeycomb structure even in the uncoagulated state. This honeycomb structure of the uncoagulated state must not be confounded with the honeycomb structure which appears in many coagulated colloids. The structure attributed by Bütschli to uncoagulated protoplasm is entirely compatible with physico-chemical observations, for, as has been pointed out by Quincke, such a structure is the logical result of the intimate mixture of two or more colloids of different surface tensions. That several colloids are present in the egg is indicated by the fact that a number of different colloidal substances (different proteins) can be extracted from the egg, and also by the morphologic fact that different portions of the egg protoplasm do not have the same optical activity.

From a physico-chemical standpoint the sol nature of unfertilized egg protoplasm is found in its remarkable fluidity, a property which is markedly diminished when the astrospheres are formed. Dr. Frank Bancroft has called our attention to fertilization experiments in marine material, in which the astrospheres formed after fertilization of the egg could be squeezed out of the egg as solid plugs. This fact is at once an argument for the liquid character of egg protoplasm in general and the more solid character of the astrosphere.

Histologic study of the process of fertilization brings further evidence, which indicates that we have to do with a process of coagulation in the egg. This is shown by the fact that after the entrance of the spermatozoön, or after the initiation of parthenogenetic development by any means whatsoever, the previously homogeneous or finely granular egg protoplasm becomes more coarsely granular, and little by little the fibrils of the astrosphere are formed. This description corresponds with that given above, of the formation of the open-net and fibrillar structure in a colloidal solution undergoing coagulation. In certain eggs various observers have described the presence of a histologic structure even in the resting egg. In these cases also, however, the granules previously present become larger and the protoplasmic structures more distinct, besides assuming a definite orientation when the astrospheres are formed.

It was pointed out above that the process of coagulation in a colloid is attended by a liberation of water, which frequently evidences itself by an external separation of colloid and solvent. Evidence of such a separation of colloid and water is found in the formation of the fertilization membrane in the eggs of many species which have been made to develop either by natural or artificial means. When the fertilization membrane is formed, the volume of the egg protoplasm proper becomes less and the egg transmits light less easily than before.

The fact that no fertilization membrane is formed in many eggs can not be taken as an argument against the correctness of the idea that the process of fertilization is essentially a process of coagulation for certain eggs, such as those of the sea urchin, which always show a fertilization membrane when fertilized by a spermatozoön, may not do so when made to develop artificially. Yet even these parthenogenetic eggs may be made to show fertilization membranes if only certain salts are present in the sea water.

We have yet to explain a marked difference between the process of coagulation of an ordinary colloid in a test tube and the formation of the astrosphere, namely, the specific orientation of the gelation in the egg. The chief reason for this difference is probably to be sought in the fact that in the egg the coagulation takes place from one point only, while in a test tube it occurs simultaneously from an innumerable number of points. Through this localization of the coagulation in the egg the ordinary process of gelation is markedly modified. The gelation spreads in a wave radially from the coagulating point. Those portions of the protoplasm which lie nearest this point are the first to coagulate. The coagulation is, however, not without design as when an ordinary sol gels, but occurs in definite directions so that the radiating structure of the astrosphere is formed. It was shown above that fibrils are produced whenever the ordinary coagulation of a colloid is modified by being made to occur under a directive stress. We believe that the formation of the fibrils of the astrosphere in the egg can be explained in the same way as the formation of a fibrillar structure in the coagulation of any colloid. The sources of the directive stress in the egg during the formation of the astrosphere can not be discussed in detail here, but changes in surface tension, currents produced through the separation of colloid and solvent, etc., during the coagulation may by themselves or together serve as the source of this directive force.

The collection of coagulated particles first about the coagulating point (the middle piece of the spermatozoön in normal fertilization) gives rise to the clear area found in the center of every astrosphere. The gradual growth of the astrosphere is an expression of the gradual spread of the process of coagulation from the center of the

astrosphere outward. It is interesting to note, finally, that the time required for the production of an astrosphere in an egg and an ordinary coagulation in a sol is about the same.

The facts given above lead us to believe that *the formation of the astrosphere, or what amounts to the same thing, according to our definition, the process of fertilization, is identical with a localized and oriented gelation.*

In our concluding paragraphs we shall bring as further evidence that the laws governing colloidal solutions actually suffice, according to our minds, to explain the by-no means simple structure of the astrosphere, the work of Bütschli, Alfred Fischer and Rhumbler. These observers have produced artificially, in unorganized colloids, by the same methods and means which have been employed to produce these structures in eggs, astrospheres, not unlike those found in the ovum. Our theory serves also to harmonize the results obtained by these observers, which, according to them, stand in apparent variance with each other. The recognition of the fact that their experiments are made with colloids and that the means employed to produce the artificial astrospheres are all such as the physical chemist may use to convert sol into gels is the harmonizing element.

In the following table, based on the one formerly given, the attempt is made to point out the coagulating factor in each of the processes of normal or artificial fertilization with which we are thus far acquainted. Perusal of this table will show that all the physico-chemical methods already enumerated for producing gelation in colloids have been successfully used in the production of astrospheres in egg protoplasm, or what amounts to the same thing, for the normal or artificial fertilization of the egg. It indicates at the same time how Bütschli, Alfred Fischer and Rhumbler have succeeded in employing nearly all these methods for the artificial production of astrospheres in unorganized colloids as well.

I. *NORMAL FERTILIZATION: EGG AND SPERMATOZOON BOTH PRESENT.*

1. *Normal Egg and Normal Spermatozoön.*—The gel-producing factor resides in the spermatozoön. The entire spermatozoön is, however, not necessary, as only the head and middle piece enter the egg, the tail-piece disappearing before an astrosphere is produced. Histologic examination shows that the formation of the astrosphere starts from the middle piece, while the head-piece swells markedly to form the male pronucleus.

2. *Normal Egg and Incomplete Spermatozoön.*—It has been shown by Boveri that the middle piece alone is necessary for the production of an astrosphere. Under certain experimental conditions the head-piece of the spermatozoön can be kept quiescent in the egg, the middle piece alone leading to the formation of an astrosphere.

3. *Egg Without Nucleus and Normal Spermatozoön.*—In this case a normal spermatozoön enters an egg fragment containing no nuclear substance. The formation of an astrosphere occurs in this case also.

4. *Polyspermia.*—Under certain experimental conditions several spermatozoa may enter an egg. Multiple astrospheres corresponding with the number of spermatozoa are produced under these circumstances.

The gel-producing factor in all these cases of normal fertilization is the spermatozoön, or more accurately, the middle piece of this cell. It might be thought that the nucleus, either of the egg or the spermatozoön, plays a necessary rôle in the formation of the astrosphere. That this is not the case, however, is shown by the experiments of Morgan, who has been able to produce astrospheres artificially by chemical means in egg fragments containing no nuclear matter.

In attempting to point out where in the foregoing table the spermatozoön, or more properly, the middle piece, belongs, we have to remember that the spermatozoön contains at least two or three such factors:

A.—The middle piece is certainly a colloidal substance, or a mixture of such; that is to say, we might have to do in fertilization with the action of one colloid on another. The colloids of the spermatozoön might be enzymatic in character. Familiar examples of coagulating enzymes are papin, trypsin and pepsin, which are able to bring about the coagulation of albumoses and peptones. The possible enzymatic character of the spermatozoön has already been pointed out by Loeb.[5] His conception of the process of fertilization is, however, entirely different from our own in that he believes the fertilizing agent to act as a mere accelerant of a process which occurs in the egg even in the absence of such a fertilizing agent.

B.—The middle piece contains, as does the entire spermatozoön, certain salts, which might act together with the colloidal substances to produce a coagulation. That the presence of these salts in the spermatozoön might play some rôle in the process of fertilization has also been pointed out by Loeb.

C.—Mention must finally be made of the possible mechanical rôle of the movements of the tail piece of the spermatozoön. The mechanical action of the spermatozoön has been especially emphasized by Meltzer,[6] though he did not, of course, attempt to explain the nature of the change which it produced in the egg.

Which of the gel-producing factors mentioned above plays the chief rôle in the formation of astrospheres can not be determined from the experimental facts which we have at our disposal up to the present time.

We have yet to show that artificial astrospheres can be produced in unorganized colloidal solutions through the addition of another colloid. The best illustrations of this of which we know are certain experiments of Alfred Fischer and Bütschli. The former observer was able to produce artificial astrospheres in gelatin, agar-agar and especially deutero-albumose through the action of dried elder pith nuclei. Bütschli has produced astrospheres artificially in gelatin by sowing into it particles of dried egg albumin. The illustrations are, however, not entirely free from criticism, for the colloids used to produce the astrospheres were not entirely salt free.

II. *PARTHENOGENESIS: EGG WITHOUT SPERMATOZOON.*

1. SO-CALLED NATURAL PARTHENOGENESIS.

So-called natural parthenogenesis is combined with such external conditions as increase in temperature, freezing desiccation, etc. This method of fertilization is characterized by the fact that the formation of the astrosphere is not brought about through a clearly demonstrable external factor, but that the gel-producing agency resides within the egg protoplasm itself, even though at times the formation of the astrosphere occurs in conjunction with certain external conditions. In parthenogenetic development the polar bodies, which are not thrown off as in ordinary fertilization, seem to be able to assume the gel-producing function of the middle piece of the spermatozoön. We are dealing in this case again with the action of a colloid on a colloid, though

5. Loeb: Am. Jour. Physiology, 1903, vol. iii, p. 470 et seq.
6. Am. Jour. of Physiology, 1903, vol. ix, p. 251.

the possibility of the co-operation of certain salts present in these polar bodies must not be overlooked. It is interesting to note that in nearly all cases of natural parthenogenesis observed thus far the development of the egg is combined with such external conditions as increase or decrease in temperature, desiccation, mechanical agitation, etc., all of them conditions which may bring about the conversion of a sol into a gel.

2. ARTIFICIAL PARTHENOGENESIS.

A. Through withdrawal of water.

B. Through specific chemical methods.

a. Through Salts.—The most general method of producing artificial parthenogenesis is the osmotic method discovered by Morgan and further developed by Loeb. In attempting to find the gel-producing agent responsible for the astrospheres in this method of fertilization, the one which first comes to mind is the increase in the concentration of the colloids in the egg. The extraction of water from the egg, however, brings about an increase in the concentration of the salts at the same time. Since we are not yet acquainted with an illustration from the realm of physical chemistry of the coagulation of an absolutely pure, that is to say, salt-free colloid, through increase in its concentration alone, we are inclined to believe that in osmotic fertilization we are really dealing with the effects of specific salts.

This view is supported by the biologic fact that artificial parthenogenesis can be produced through specific salts as indicated in the next paragraph, and by the physico-chemical fact that the coagulation of colloids is produced much more readily and generally through salts than by osmotic means. What has been said above holds for osmotic fertilization, whether brought about through electrolytes or non-electrolytes. Of the many substances which have been used for this purpose, we need mention only magnesium chlorid, potassium chlorid, sodium chlorid, etc., solutions of different sugars, glycerin, urea, etc.

We are acquainted also with the formation of astrospheres in unfertilized egg through the action of specific salts. In these water is not given off by the egg, but the entrance of these salts into the egg causes the formation of astrospheres. Under this heading we can mention the parthenogenetic development of chetopterus through the addition of traces of potassium chlorid as first found by Mead and later worked out in detail by Loeb; the parthenogenetic development of amphitrite through the addition of calcium chlorid or calcium nitrate, as found by Martin H. Fischer, as well as the development of strongylocentrotus eggs, as found by Herbst, through traces of silver salts.

It is of interest, finally, to make brief mention here of experiments by Morgan, which show that in artificial parthenogenesis, as well as in normal development, the nucleus plays no important rôle in the formation of the astrosphere. Morgan has succeeded in producing astrospheres in egg fragments containing no nuclear matter by treating them with concentrated salt solution of various kinds. As examples of the artificial production of astrospheres we may cite the following: Particles of calcium sulphate in gelatin (Bütschli), diffusion of mercury chlorid or platinic chlorid, or the addition of tiny crystals of mercury chlorid, potassium bichromate, etc., to albumose solutions (Alfred Fischer).

b. Through Acids (Organic and Inorganic).—Tichomiroff[7] was the first to produce parthenogenesis artificially, and this in Bombyx, which he succeeded in making develop through treatment with strong acids. Further experiments in this direction have been made by Loeb and Neilson with star fish eggs, and more recently by Delage. The acids used have been H_2SO_4, HCl, HNO_3, H_2CO_3, etc. Organic acids, when sufficiently concentrated, are equally effective, as has been shown by Loeb. As an example of the artificial production of astrospheres in unorganized colloids through acids, we may cite the work of Alfred Fischer, who was able to produce these structures by allowing osmic or picric acid to diffuse into albumose solutions.

c. Through Alkalies.—J. Loeb has been able to produce cell division in certain marine eggs through the addition of various to the sea water. As a parallel illustration of the production of astrospheres through alkalies we may mention Alfred Fischer, who succeeded in producing these histologic in faulty acid albumins through the addition of alkalies.

It is interesting to note that astrospheres have been produced in eggs of the same species through the addition of either acid or alkalies. Alfred Fischer has found this possible, also in solutions of unorganized colloids. From a physico-chemical standpoint, it seems strange at first sight that acids and alkalies should both be able to produce the same effect in the species of egg. The paradox may, however, be explained by an observation of Hardy, who has found that an alkaline sol of albumin is converted into a gel through the addition of an acid. If more acid is added, however, the gel is redissolved, and an acid sol of albumin is produced. The acid sol of albumin may then again be reconverted into a gel, which can then be changed to an alkaline sol by the addition of an alkali. This indicates how a gel can easily be produced through either the addition of an acid or an alkali.

d. Through Other Chemicals (Alcohol, Etc.).—Mathews has succeeded in causing the parthenogenetic development of sea urchin eggs by treating them transitorily with chloroform, ether or alcohol. Mention must also be made under the heading of the work of R. Hertwig, who several years before noted a production of astrospheres in the same species of egg after treatment with strychnin. We are dealing in all these substances with well-known precipitants of colloidal solutions.

C. Through Changes in Temperature.—The parthenogenetic development of star fish eggs has been produced through a lowering of temperature to near the freezing point by Greeley. In discussing the physiologic effects of decrease in temperature, we have to consider two processes. If the temperature is decreased to the freezing point ice is formed, in consequence of which the concentration of the colloids of the egg or the salts dissolved in the protoplasm is increased. Either of these conditions, it will be remembered, is effective in determining the formation of gels. If the temperature is not reduced to the freezing point we can look on the coagulation of the colloids of the egg only as a gelatin of a heat-reversible sol (such as gelatin). As Greeley kept the eggs at a low temperature for only a short time, it might be thought that the effects of the lowering of temperature would be reversed as soon as the eggs were returned to room temperature. We learned above, however, from the experiments of Hardy that a heat-reversible gel does not return to the liquid state after gelation when the increase in temperature is only a few degrees.

Mathews and Delage have succeeded in producing cell division in certain marine animals through an increase of temperature. The experiments of Delage are

7. Tichomiroff: Arch. v. Anat. u. Physiology, 1886, supp. vol. p. 35, and Zoölog., Aug., 1902, p. 25.

not entirely free from criticism. In this case the gel-producing factor is, of course, the increase in temperature.

Through a decrease in temperature Bütschli and Rhumbler have succeeded in producing astrospheres in gelatins, which simulate in a truly striking way those found in developing eggs.

D. Through Mechanical Means.—The first to produce artificial parthenogenesis through mechanical means was Tichomiroff, who succeeded in causing the unfertilized eggs of Bombyx to develop through brushing. Mathews was able to show that the eggs of star fish will develop artificially if shaken or squirted through a pipette. These results have been confirmed and shown to hold true also for the unfertilized eggs of amphitrite and chetopterus by Martin H. Fischer. Through the work of Scott it has been shown that at least two periods exist in the life of the unfertilized amphitrite eggs, during which mechanical agitation is most effective in bringing about their development. The rôle of mechanical agitation in bringing about the precipitation of colloidal solutions has already been discussed above, and needs no further comment here.

Loeb has expressed the view that all unfertilized eggs possess a certain tendency to develop parthenogenetically, that is to say, without being acted on by any external agent. Certain other authors have expressed a belief that it is only necessary to expose the unfertilized eggs of various marine animals, especially star fish, to certain "abnormal" conditions. The latter view is certainly incorrect. We believe that in all cases specific external conditions determine the development of the unfertilized egg. Or to express this in terms of our theory, we can say that the colloidal solutions of the egg protoplasm lie exceedingly near their critical point, that is to say, their coagulation point. To indicate how exceedingly slight these external conditions may be which determine the parthenogenetic development of the egg, we may quote the experiments of Herbst, who found that only after the most careful cleansing "with acids and stiff brush" could he free his dishes which had contained traces of silver salts, from this chemical sufficiently to prevent it from exerting a fertilizing effect. Even the most careful transference of amphitrite eggs from one dish to another is sufficient frequently to cause the development of a certain per cent. of unfertilized amphitrite eggs.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN.

CATHARTICS.

CHAPTER VII.

The Anhydrid Group.

The active principles in drugs of this group are resinous in character; their chemistry is obscure, but most of them are known to be glucosides. They cause violent irritation and even death in excessive doses and are not commonly used alone unless a strong irritant action is desired. Since they produce very watery stools, they are sometimes used in dropsy, or to sweep away parasites—for instance, after a narcotic tenifuge, such as aspidium.

JALAPA.—U. S.—Jalap, the dried tuberous root of *Exogonium purga*, gathered in the neighborhood of Jalapa, Mexico, whence its name. The drug was introduced into Europe about 1609; it is now official in all pharmacopeias. The drug should contain not less than 8 per cent. of total resin, but not more than 1.5 per cent. of resin soluble in ether.

Average dose (in powder): 1 gm. (15 grains).

PULVIS JALAPÆ COMPOSITUS.—U. S.—This is a mixture of 35 parts of jalap and 65 parts of potassium bitartrate.

Average dose: 2 gm. (30 grains).

RESINA JALAPÆ.—U. S.—That part of the alcoholic extract which is insoluble in hot water.

Average dose: 0.12 gm. (2 grains).

COLOCYNTHIS.—U. S.—The peeled dried fruit of *Citrullus colocynthis*, a species of cucumber. As "Kolokynthis," this drug was described by Dioscorides and appears to have been well known even before his time; since then it has been in constant use.

Average dose: 0.05 gm. (50 mg. to 1 grain).

EXTRACTUM COLOCYNTHIDIS.—U. S.—

Average dose: 0.030 gm. (30 mg. ½ grain).

EXTRACTUM COLOCYNTHIDIS COMPOSITUM.—U. S.—Compound Extract of Colocynth is a mixture of 16 parts of extract of colocynth, 50 parts of purified aloes, 6 parts of cardamon, 14 parts of resin of scammony and 14 parts of soap.

Average dose: 0.50 gm. (7½ grains).

PILULÆ CATHARTICÆ COMPOSITÆ.—U. S.—Compound Cathartic Pills. Each contains:

Comp. ext. of colocynth.....gr. iss	08
Mild mercurous chlorid.....gr. i	06
Resin of jalap.....gr. 1/3	02
Gamboge .....gr. 1/4	015

Average dose: 2 pills.

PILULÆ CATHARTICÆ VEGETABILIS.—U. S.—Vegetable Cathartic Pills. Each contains:

Comp. ext. of colocynth.....gr. i	06
Ext. of hyoscyamus.....gr. ss	03
Resin of jalap.....gr. 1/3	02
Ext. of leptandra	
Resin of podophyllum, ãã.....gr. 1/4	015
Oil of peppermint.....m. 1/8	008

Average dose: 2 pills.

SCAMMONIUM.—U. S.—Scammony, a gum-resin obtained by incising the living roots of *Convolvulus scammonia*, has been known and properly esteemed as an active cathartic for over 20 centuries.

Average dose: 0.250 gm. (4 grains).

RESINA SCAMMONII.—U. S.—Resin of Scammony is that portion of the gum-resin that is soluble in alcohol, but insoluble in water.

Average dose: 0.200 gm. (3 grains).

PODOPHYLLUM.—U. S.—Podophyllum, popularly known as mandrake root or May apple, is said to have been used by the American Indians, but the statement has been repeatedly questioned.

Average dose: 0.500 gm. (7½ grains).

FLUIDEXTRACTUM PODOPHYLLI.—U. S.

Average dose: 0.5 c.c. (8 minims).

RESINA PODOPHYLLI.—U. S.

Average dose (purgative): 0.015 gm. (15 mg. ¼ grain); (laxative): 0.005 gm. (5 mg. 1/10 grain).

LEPTANDRA.—U. S.—Is rarely used in substance.

EXTRACTUM LEPTANDRÆ.—U. S.

Average dose: 0.25 gm. (4 grains).

FLUIDEXTRACTUM LEPTANDRÆ.—U. S.

Average dose: 1 c.c. (15 minims).

EUONYMUS.—U. S.—Euonymus is the dried bark of the root of *Euonymus atropurpureus*.

The Extract (dose 0.12 gm. (2 grains), and the Fluidextract (dose 0.5 c.c. or 8 minims) are also official.

ELATERINUM.—U. S.—Elaterin, a neutral principle obtained from elaterium, a substance deposited by the juice of the fruit of *Ecballium elaterium*.

Average dose: 0.005 gm. (5 mg. 1/10 grain).

The therapeutics of the anhydrid group may be treated together, as the action of the different members is very similar and there are fewer indications for one, rather than another, in a particular case.

They are all used to some extent in dropsy, but elaterium is the most effective of all in the removal of water. They cause depression, and when this is severe it demands stimulation.

They are rarely used alone; thus scammony, which, in overdoses, has caused death, is used in the compound cathartic

pill; jalap is often combined with calomel or with potassium bitartrate, in the compound jalap powder, which is administered alone. An example of the combination of calomel with jalap is the calomel and jalap powder of the National Formulary, which consists of:

Calomel	℥i	32
Jalap	℥ii	64

The dose is about 1 gm. (15 grains), or a smaller amount may be given and repeated at intervals of several hours.

Resin of jalap is nearly tasteless and is, therefore, often given to children; it may be mixed with a little sugar for the purpose.

Compound cathartic pills are so well known that they scarcely require further notice. The soap present (in compound extract of colocynth) slowly reduces the mercurous chlorid to the black oxid—increasing its effectiveness.

Podophyllum has been called "vegetable calomel" and it was supposed to increase the secretion of bile, but this is not probable. It causes purgation after ten to twelve hours and is very useful in acute constipation.

A suitable form of administration is suggested below, but the possible combinations are endless. The Triplex Pills (N. F.) have the following formula:

℞. Purified aloes	gr. ii	13
Mass of mercury	gr. i	065
Resin of podophyllum	gr. 1/4	016

Dr. Jno. W. Francis has used a pill containing about 1 grain, each, of purified aloes, scammony and mass of mercury, with 1/20 minim of croton oil, ¼ minim of oil of caraway and enough tincture of aloes and myrrh to make one pill.

Leptandra, euonymus and some other official vegetable drugs cause purgation, but do not require special mention here.

CAMBOGIA.—U. S.—Camboge is a gum-resin obtained from *Garcinii hanburii*.

Average dose: 0.12 gm. (2 grains).

Purgative Oils.

There are but two of these which merit discussion here. Castor oil and croton oil owe their activities to two acids, ricinoleic in the castor oil and crotonoleic in croton oil. The acid does not exist uncombined in castor oil, but is liberated when it reaches the intestine, forming new compounds which are irritant and therefore purgative.

Crotonoleic acid does exist free to a small extent in croton oil, which is, therefore, irritant even when applied to the skin.

Other bland fixed oils are sometimes used as laxatives. Among those which are official are Olive Oil, Cotton Seed Oil, and Expressed Oil of Almond.

OLEUM RICINI.—U. S.—Castor oil, expressed from the seed of *Ricinus communis*, is a pale, yellowish or almost colorless, transparent, viscid liquid, having a faint mild odor, but an offensive taste. It was known to the ancients, but fell into disuse; it was again brought into notice in 1764 by a West Indian physician, who described it as a gentle purgative.

Average dose: 15 c.c. (4 fluidrachms).

Castor oil is very useful in ordinary constipation, and often in diarrhea, where it serves to remove the irritating substance.

Owing to the widespread repugnance to the taste of castor oil, many means have been devised for disguising it. If the mouth is merely rinsed with strong whisky, the oil may be swallowed without discomfort. For children it is given in the form of soda water with syrup of sarsaparilla, or with ginger ale, when it is often swallowed without the child's knowledge.

The following formula is useful for disguising the taste:

℞. Spts. menth. pip.	℥iiss	10
Ol. ricini q. s. ad	℥iii	100

Sig.: 15 c.c. (4 fluidrachms) to be taken without further dilution.

Emulsions of castor oil have never been popular, as they but imperfectly disguise its taste. Soft capsules, containing 15 minims each, may be swallowed, and many persons find them unobjectionable. Three or four capsules are given at bedtime.

OLEUM TIGLII.—U. S.—Croton Oil. A pale, brownish-yellow fixed oil, expressed from the seeds of *Croton tiglium*; it has a slight fatty odor, and a mild, oily, afterward acrid and burning taste. (Great caution is necessary in tasting.)

Average dose: 0.05 c.c. (1 minim).

Owing to its irritant character and the violence of its action, croton oil is not generally used as a purgative, but there are conditions in which it is very useful; it may be given in apoplexy, when the patient is unconscious, a drop being placed on the tongue either in the form of an emulsion or on sugar. It is useful when, from any cause, there is difficulty in administering a bulky cathartic, but it is contraindicated in inflammatory conditions of the intestines.

Croton oil is also applied to the skin as an irritant.

Laxative Sweet Substances.

Some of the following substances may be treated under the subject of dietetics, since they are laxative mainly because of the bulk of non-absorbable matter. The dose is large and the action mild—with the exception of Cassia Fistula, which is apt to cause griping.

MANNA.—U. S.—The concrete saccharine exudation of *Fraxinus ornus*. It consists mainly of a peculiar sugar, mannite.

Average dose: 16 gm. (240 grains).

PRUNUM.—U. S.—Prune, the partly dried fruit.

TAMARINDUS.—U. S.—The preserved pulp of the fruit.

Average dose: 15 gms. (½ ounce).

FICUS.—U. S.—The partially dried fruit.

CASSIA FISTULA.—U. S.—The dried fruit. This and the three preceding articles enter into confection of senna.

Manna is a mild laxative, but it is rarely used alone; it enters into the compound infusion of senna.

Phenolphthalein is not official as a medical substance, but is mentioned in the Pharmacopeia, in the list of reagents and test solutions, as an indicator in acidimetry.

It has attracted some attention of late as a laxative. In combination with soap and salicylic acid, it is being widely advertised under the name of "Probilin."[1]

Since many of the symptoms resulting from indigestion and constipation were formerly attributed to a deficiency in the formation of bile, agents were sought which would increase its secretion. Many of the purgatives now in common use were supposed to possess this property, but the only agent which has been shown by experiment to increase the secretion notably is bile itself.

The precise rôle played by bile beyond the splitting of fats, is still a moot point.

In this connection it may be mentioned that the mineral acids, particularly the dilute nitro-hydrochloric, have been much used for their supposed cholagogue action; this is too slight to give them practical value, but they are useful in many conditions for which a deficiency of bile is supposed to be the cause.

Dr. Philip Shaffer recently gave a woman with biliary fistula about 20 gms. (5 drams) of the purified ox bile in three days, resulting in a notable increase of bile secretion.

The patients' general condition seemed to be but little affected by the absence of bile from the intestine, but fats were not so well borne as in a normal person. This but confirms the experience of other observers, and in this light cholagogues lose much of their importance.

FEL BOVIS.—U. S.—The fresh bile of the ox is only used in the form of:

FEL BOVIS PURIFICATUM.—U. S.—Its use has already been mentioned.

Average dose: 0.5 gm. (8 grains).

(To be continued.)

1. The proprietors of probilin quote Dr. W. Bauermeister of Brunswick, Germany, as authority for the assertion that salicylic acid and sodium oleate are the most powerful cholagogues. This is not in accord with the generally accepted opinion of therapeutists. The same authority states that he had the two drugs put up in pills containing 1⅓ grains of each, adding menthol and phenolphthalein as analeptics and to mildly stimulate intestinal activity. But we are unable to understand why he should add "these pills, named probilin, are difficult to prepare." At least, any competent American pharmacist can readily prepare them. Three or four of these pills taken before retiring are said to be effective.

Clinical Reports

SUCCESSFUL SUTURE OF A PENETRATING WOUND OF THE HEART.

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PHILADELPHIA.

Within the past three years I have made two contributions to the subject of penetrating wounds of the heart, the last of which was read at a meeting of the College of Physicians in May,[1] 1904, and it is my intention to briefly relate the details of a case of successful suture of a stab wound of the right ventricle and to make a few comments on the symptoms and treatment. This patient is the second one on whom I have reported, the first having died on the operating table.[2]

Patient.—A. C., aged 38, a well-developed, healthy, colored man, was admitted to the Bryn Mawr Hospital on July 30, 1905, at 12:20 a. m.

History.—He had been stabbed with a "penknife" about one hour previous to his admission. Immediately after the stabbing he was able to walk a short distance, but then fell to the ground and soon became unconscious. His friends brought him to the hospital in a cab.

Examination.—At the time of his admission he was profoundly unconscious, the reflexes were lost, the pupils dilated, skin cold and moist, finger nails cyanosed and respiration very rapid and shallow. There was no pulse in the peripheral vessels and the heart sounds were very distant, rapid and irregular. The patient's clothing was saturated with fresh blood and an examination showed three stab wounds, one at the bend of the left elbow, one just below the edge of the pectoral muscle in the left axilla and a third about three-fourths of an inch to the left of the sternum and on a line with the fourth costal cartilage. This latter wound was more extensive than either of the others and measured about one and three-fourths inches in length, extending upward and outward. At the time of admission the first two wounds were not bleeding, but a small amount of hemorrhage was taking place from the wound over the heart which was partly filled with clot. The area of cardiac dullness was decidedly increased.

Treatment.—The patient was given vigorous stimulation and in about half an hour his condition had improved somewhat and he could be partially aroused. I saw the patient about 1:45 with Dr. Branson, who assisted me in the subsequent operation, and who thought from the symptoms that the man at least had a wound of the pericardium and that this sac was filled with blood, making pressure on the heart.

Operation.—The patient improved considerably after his admission, and when put on the operating table he could be aroused sufficiently to give his name. He had had morphin and atropin, and it took but a small amount of ether to produce anesthesia. An exploration of the wound over the heart showed that the fourth costal cartilage had been completely severed transversely. The wound did not extend beyond the cartilage, and it is this fact which prevented blood escaping readily from the pericardium. When the cartilage was manipulated a quantity of blood escaped between its divided end. The entire cartilage, with a portion of the rib itself, was removed with rongeur forceps. Exploration of the pericardium then showed a wound which would admit the end of the index finger. This wound was increased in size and the pericardium was found filled with blood clot and liquid blood. The patient's pulse had improved under the ether, but it was much fuller and more regular after the evacuation of the pericardium. The sac rapidly filled again with fresh blood, and I had considerable difficulty in locating the wound in the heart itself. In my former case I had no trouble of this kind, as on passing my finger over the surface of the heart it readily discovered the opening. Being unable to discover the wound by digital examination, I put two fingers behind the heart, lifted it up to the pericardial opening and by rapidly sponging away the blood I was able to see the wound, which was partially filled with clot. It was situated in the right ventricle near the auriculo-ventricular groove. The bleeding from this wound was very free, but could be controlled readily by digital pressure. It easily admitted the tip of the index finger and measured from one-half to three-fourths of an inch in length. The opening in the endocardium seemed about one-half as long as the external wound. A traction suture of chromicized gut was then rapidly passed through both edges of the wound and the heart held firmly up against the pericardial opening. Then four other sutures of chromicized gut were introduced with an intestinal needle. The traction suture had been put in with a spear-pointed needle and there was considerable oozing from the punctures. This I controlled with an additional suture passed with an intestinal needle. The traction suture was of the greatest aid in the passage of the others, and without it it would have been very difficult to have closed the wound, as the heart muscle was continually contracting and expanding. I made no effort to avoid the endocardium in passing the sutures, as I think it is more important to close the wound throughout the thickness of the heart wall than to avoid entering the endocardium. A small gauze drain was placed against the line of heart sutures and brought out through the pericardial opening in which no sutures were placed. In order not to prolong the operation I simply packed the external wound also. The patient went off the table in very satisfactory condition. Pulse 88, respiration 32. The pleura was not injured and I was careful to avoid it in my manipulations.

Postoperative History.—During the subsequent twelve hours there was considerable serous oozing, requiring a change of dressing. At this time the patient's pulse was 112, respirations 36 and emperature 101°. He complained of considerable pain in the left shoulder and chest. The second day after the operation his condition was quite alarming; respirations were 62, and he complained of great distress in the chest. I changed the dressing at this time and found that the gauze packing had become so dry and adherent to the wound as to interfere with drainage. I withdrew the gauze, and a large quantity of fluid from the pericardium escaped with a gush. A smaller gauze drain was introduced and a moist dressing applied, in order to insure drainage. The patient was immediately relieved and the respiration fell to 38 within a short time. Large quantities of salt solution were given by the rectum and were readily absorbed. On the second day the patient took liquid food with relish. Except for the distension of the pericardium, due to faulty drainage, the patient made an uncomplicated recovery. The dressing was changed every other day, and on each occasion for some time the pulsating heart could easily be seen. On August 5, six days after the operation, I introduced several catgut sutures into the external wound and closed it nearly completely, but no sutures were put in the pericardium, the wound in this structure having nearly closed.

On August 7 the pericardial wound had entirely closed. On August 10 the man sat up in bed, and August 13 he was out of bed. On August 19, twenty days after his operation, he was discharged with a superficial granulating wound. On September 10 he returned to work as a master plumber and tells me he has not lost a day since. At the present time he is perfectly well, and has not the slightest discomfort or pain about the wound. His heart action is regular and normal.

In reviewing the symptoms in this case it will be readily seen that they were those of compression of the heart and not those of simple profuse hemorrhage. The unconsciousness, the embarrassed respiration, the absence of pulse, the cyanosis, the feeble and irregular heart sounds, together with the increased cardiac dullness, indicated plainly compression of the heart due to hemorrhage into the pericardium. The absence of signs of fluid in the pleura indicated that this membrane had escaped injury. I think that it is important to determine, if possible, before operating for wounds of the heart, whether or not a wound of the pleura has taken place, since it may influence the choice of the method of exposing the heart. In neither of my cases was the

1. Amer. Jour. Med. Sciences, September, 1904.
2. Phila. Med. Jour., Nov. 1, 1902.

pleura injured. In the first case, however, I produced a small wound of the pleura in resecting the cartilage; I was able to avoid this complication in the present case. Unless one is able to demonstrate a wound of the pleura I do not believe that it is wise to make the osteoplastic flap which is generally recommended, but think that it is better to separate the periosteum and to excise as much of the cartilage, sternum or rib as may be necessary to give free access to the wounded heart. In the present instance, I had ample room and after the introduction of the traction suture had not the slightest difficulty in closing the heart wound. Two fingers behind the heart are quite enough to lift it up where it can be plainly seen, and the traction suture introduced. After the introduction of this suture the rest of the operation is easy. In making the osteoplastic flap it is very difficult to avoid injury of the pleura. In but a few reported cases has this structure escaped injury.

I shall be careful in my next case, if I am fortunate enough to have another, not to use any other than a curved intestinal needle, as the beveled needles produce considerable hemorrhage. I think, also, in a future case I shall not drain the pericardium, but shall close it at once, since it has been shown that after complete closure it does not become distended with fluid. The accumulation in this case was probably due to the irritation of the heart surface by the gauze which I employed. Drainage of the external wound, however, I believe should always be employed. A large percentage of the patients who have been operated on for penetrating wound of the heart have died from infection, and in a considerable proportion of those who have recovered the cure has taken place in spite of infection. I expected suppuration in this case, as there was little opportunity to sterilize the skin thoroughly, and I was agreeably surprised that the wound entirely healed without the slightest infection. The temperature chart shows the highest temperature which the patient had was 101° on the day after operation, and that after a few days the temperature remained normal.

It is remarkable that although the first successful operation of stabwound of the heart was done in 1896, less than ten years ago, there have already been reported about 100 cases, and the percentage of recovery has been surprisingly high. Dr. F. T. Stewart, in a paper which he read before the College of Physicians in May, 1904, and in which he reported a successful case, showed a collection of sixty cases with a recovery rate of nearly 40 per cent. Since his paper was published there have been a number of successful cases reported by foreigners, but I have been able to find no successes reported by American surgeons. If I am correct in this, the case which I report is the fifth successful one in this country.

This subject was so freely discussed at the meeting of the college, to which I previously referred, that I hesitate to go more deeply into the question of statistics and technic. Before closing, however, I would state that there are constantly reported cases in which patients have lived for a number of hours or days after stab wounds of the heart, a correct diagnosis not being made until after death. Whenever there is a question of wound of the heart an exploration should be made, just as it is made in questionable wounds of the abdominal wall. Too vigorous stimulation, such as the intravenous injection of salt solution, is to be strongly condemned in these cases until after the heart wound has been closed, and even then should be employed with caution.

TETANUS FROM BLANK CARTRIDGE WOUND IN A BOY'S RIGHT HAND.*

J. NOER, M.D.
STOUGHTON, WIS.

History of the Case.—E. A., aged 12, was shot in the palm of the right hand by a blank cartridge June 26, 1905, and came at once to my office. I found a small wound in the palm of the right hand between the second and third metacarpal bones. The immediate area about the wound was infiltrated with a 2 per cent. cocain solution, a free opening made in the skin, the interior thoroughly curetted, washed out freely, and saturated with tincture of iodin compound. A gauze drain was introduced and a light gauze dressing applied.

June 27: Wound dressed and drain saturated with iodoform introduced.

June 28: Some tumefaction on back of hand. Patient put under chloroform and a free counter opening made on back of hand and an attempt made to follow up and to clean out more thoroughly the track of injury made by the cartridge. Wound thoroughly washed with hot sublimate solution, peroxid and compound tincture of iodin, and then loosely packed with iodoform gauze.

From this time wound was dressed daily, washed with hot sublimate solution and peroxid and a gauze drain introduced between metacarpal bones. This treatment was kept up till July 8, when the drain was removed and the wound allowed to close, which it did in about three days.

Patient did not at any time exhibit any symptoms of sepsis, e. g., fever, pain, glandular swelling, and increased pulse rate.

Up to July 8 he was at all times in perfect health, except the slight annoyance from the dressing and open wound in the hand. During the first week there was some slight swelling of the hand and evidence of slight pus infection, which promptly disappeared.

Tetanus Development.—July 10: Fourteen days after injury and 2 days after removal of gauze drain he complained that his back pained him some and that in the night he had had some pain in the right side below the axilla. He attributed the pain in the back to the fact that he had been at work pulling weeds the day before. It was somewhat soothing to accept the little patient's explanation of the cause of his spinal pain, but what was to be done about the decided myalgin or whatever it might be in the right axillary region? At the first visit my patient suggested the possibility of tetanus. Were his fears to become true?

July 11: I saw patient at his home. He had had a bad night and did not feel well enough to be up. Temperature, 101; pulse, 100. Right hand painful and also pain in back along spine and on right side of chest along ribs up as far as the axilla. On movement, arm was painful. Muscles of the right arm, forearm, hand and fingers showed painful spasmodic contractures every two to five minutes. Duration of spasm was very short—two or three seconds possibly. There was no trismus or other clonic contracture. There could, however, be no question about diagnosis.

Treatment.—Antitetanic serum not being obtainable in city, it was wired for, but for some unaccountable reason was not sent till next morning, causing delay of 20 hours before first injection of 20 c.c., sixteen days after injury.

Locally, nothing was observable to indicate the serious nature of the infection. The original wound was healed and nothing abnormal was in evidence, except a scar in palm and on back of the hand. Inasmuch as the tetanus bacillus is strictly anaërobic and its activity localized in the tissues at or near the point of infection it appeared rational to anesthetize patient again, open wound thoroughly, saturate with tincture iodin and drain. This was done at once.

Hydrate of chloral was given internally, one gram every three to six hours. Its administration made the muscular contractions less frequent and less severe. A hypodermic of morphin, ¼ gr., during the evening made the contractions less painful.

* From paper read before the Central Wisconsin Medical Association, Madison.

July 13: Patient shows effect of chloral and morphin by marked drowsiness. Says he feels well, except when pain comes on. Contractions come on at pretty regular intervals in all muscles of the right side of the body, beginning always in the hand, passing up the arm and thence over the right side till they involve the back and at times the left leg, producing complete opisthotonus. Intervals are longer—5 to 10 minutes—but spasms are at times very severe and painful, so much so that patient screams loud and sharp when the spasm comes on. Temperature, 101½; pulse, 90. Hand dressed and 20 c.c. antitetanus serum injected into muscles of the back. Chloral continued and morphin, ⅛ gr., given in the morning and evening.

July 14: 8 a. m., pulse 88, temperature 99. Night fairly comfortable. Had some very severe general convulsions between 10 and 12 o'clock in the night. Nurse states that face turned blue and that several convulsions were so severe as to throw him out of the bed. Chloroform had to be given to dress hand. Ten c.c. antitetanus serum was injected into back and into tissues about wound.

July 15, 16, 17 and 18: Symptoms continued about the same, except intervals between convulsions were somewhat longer—15 to 20 minutes—and patient would at times rest from ½ to 1 hour without any painful contractions.

July 16 and 17: Patient apparently much better. Is less sensitive to extraneous disturbances, as noise and light. Hyperesthesia of skin not so marked. For days the skin was so sensitive that a breeze of cold air or a sudden touch on the skin of the hand or back would invariably produce a convulsion. Convulsive seizures are shorter in duration and not so painful. The use of morphin discontinued and chloral given only every six hours and dose lessened about one-third. While the convulsive seizures are in general much less severe and farther apart, he would have several very severe seizures during the 24 hours. These would invariably start in the right hand, passing up the arm, involving, in regular order, muscles of the arm, shoulder and back till complete rigidity with opisthotonus was produced.

The milder attacks were momentary and would involve only the right side, often only arm and back. Often patient would only complain of being too hot. There would be a momentary restlessness and the "spell" was over. The face has the characteristic expression of *risus sardonicus*. Muscles of lower abdomen hard and board-like. All the muscles of the right arm, shoulder and along right side of spine are in a state of clonic contraction. The arm is flexed at the elbow, as is also the hand at the wrist and likewise the fingers.

Notwithstanding the permanent contractions of the muscles above mentioned and the occasional severe convulsive seizures, the patient was apparently much better. Pulse and temperature were normal, appetite and digestion excellent and general condition fairly good. The chloral was gradually discontinued during the next two days.

July 20: Patient had several severe and protracted convulsions in the night. Chloral was again given in gram doses, every three hours, till symptoms again abated, when interval of administration and dose was again diminished.

July 25: Convulsive seizures limited to two or three in twenty-four hours. By July 29 they practically ceased and chloral was given only three or four times in the twenty-four hours, being discontinued entirely during the following three or four days. Gauze drainage discontinued and wound permitted to close.

For a period of about 3 weeks the patient took from 2 to 5 grams (30 to 75 grs.) of chloral a day. On withdrawing it I found that he had acquired the chloral habit and it took about two weeks to wean him from it. The contractures of the muscles of the fingers, hand, arm and shoulders persisted for several weeks, but gradually disappeared by use of massage and warm baths.

Recovery in this case can, I think, be attributed to the following causes:

1. The mildness of the original infection or an unusual resisting power on the part of the patient.

2. The aid of the thorough mechanical cleaning and free drainage of wound.

3. The abundant use of chloral hydrate to control convulsions, to ease the muscular rigidity and to induce sleep.

The antitetanus serum may have aided to some extent the natural protective powers of the patient. I doubt very much if it had in this case any real curative value.

New Instrument

AN IMPROVED NIPPLE-SHIELD.

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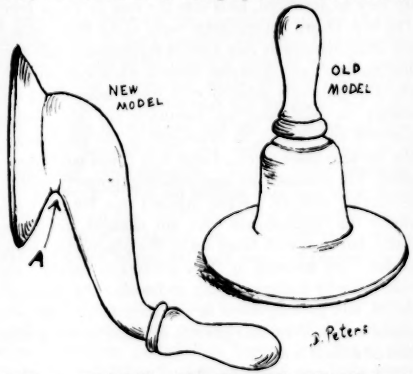
The ordinary type of nipple-shield is so frequently unsatisfactory in cases where such an appliance is urgently needed that I have designed a new model to overcome some very obvious defects in the old one.

It very often happens that the shield now on the market can not be used at all, and, indeed, in most instances where it is used there is considerable discomfort occasioned either the mother or the child. The mother must invariably assume an awkward position in order that the milk may flow in the proper direction. If in bed she must turn so that she lies practically over the child; if sitting up she must bend forward



at a very uncomfortable angle, otherwise the milk will remain in the shield. The child not infrequently is restless and dissatisfied because it is compelled to nurse so long before any milk reaches it. This is due to the fact that the rubber nipple is at a higher level than the bottom of the chamber into which the milk is first received. As a result of this a teaspoonful or more of milk must always be drawn out before the child gets a drop. Nurses, I find, have recognized this and are prone to put milk in the shield before placing it on the breast. Clearly, this is a troublesome and inadvisable procedure.

The model which I have devised is shown in the accompanying diagram. It is so constructed that the first milk drawn from the breast reaches the infant immediately. The breast nipple projects beyond the angle (marked A) in the floor of the shield and the milk falls at once through the glass tube to the rubber nipple. Delay in the transmission of the milk is entirely avoided and can not be a source of annoyance to the infant. Moreover, the S-shape curve of the shield allows the mother to be in a more comfortable position than is possible with the old model. Whether lying down or sitting up the posture required when the new model shield is used is the same as when the child is nursed directly from the breast.

The pattern presented here was devised some months ago when I found the old style appliance of no help to me in a case where the need of a shield was imperative. It worked very satisfactorily at that time and has been used since with equally good effect.

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SPECIFIC SERA AGAINST INFUSORIA.

Notwithstanding the importance of many animal parasites in the production of disease, comparatively little of immunity in connection with this class of organisms. experimental work has been done from the standpoint This is evidently due to the fact that it is difficult to obtain cultures of such organisms. That immunity is an important factor in diseases of protozoan origin is clear from the fact that in malaria an acquired immunity may be developed, as is also the case in Texas fever. The best known experimental work along these lines is the immunization of rats against trypanosome infection. Rabinowitsch and Kempner treated white rats with the blood of gray rats infected with trypanosomes and succeeded in producing an immunity in the former. Laveran and Mesnil, in investigating the properties of the immune blood serum, found that it was not trypanocidal, but possessed an agglutinating property without destroying motility. When injected into the peritoneal cavity the trypanosomes were not changed morphologically, but were soon taken up by the phagocytes and digested. All attempts by these workers to isolate a specific toxin by heating, drying or freezing the organisms failed, and growing them in collodion sacs in the peritoneal cavity of animals gave no evidence of the production of a toxic body.

An important paper by Rossle[1] recently appeared, in which the author gives his results of immunizing animals with infusoria. *Paramecium caudatum* and *Glaucoma scintillans* were injected several times subcutaneously into rabbits and guinea-pigs and the properties of the serum of these animals were compared with normal serum. Since normal serum in pure condition is injurious to the organisms it is necessary to work with diluted sera. At a dilution of 1 to 20 or higher no effect is noted by the normal serum on the infusoria. The immune serum, however, behaves very differently. The infusoria when introduced at first swim about in a very lively manner; this activity soon ceases and there follows a specific toxic effect in the form of a paralysis of the paramecium, involving the cilia of the surface, the contractile vacuole and finally the undulating membrane of the cytostome. A distinct agglutination does not occur, but the organisms tend to adhere to the sides of the container and other objects, but not to each other. No anatomic changes could be made out nor anything that could be interpreted as a lytic process, though certain differences could be brought out by vital staining between the protozoa treated with the normal and the specific sera. The fact should be noted that in low dilutions the same effect was observed in the normal serum as in the specific serum, there being therefore not a qualitative, but only a quantitative difference between them. The immune serum lost its specific properties by heating at 56 C. for one hour and could not be reactivated by normal serum. A curious result was obtained by using Loeffler's method of immunizing with the dry heated bodies of the paramecia. Obtained in this way, the specific body of the immune serum was much more stable, resisting a temperature of 70 degrees for one-half hour, but in other respects agreeing with the serum prepared by the injection of living infusoria.

Probably the most interesting and important observation made was the following: If the organisms were introduced into the specific serum for a time, then removed and washed, and after a time again introduced into the serum, it was found that they were less sensitive to the specific effect, and by continuing this process the organism finally reacted to the specific serum in the same way as to the normal. In other words, the infusoria themselves had become immunized against the specific serum. It is possible, or rather probable, that protozoa which cause disease may thus immunize themselves against the body juices in this manner, and Rossle calls attention to the possibility of this occurring in these diseases; and this may be an explanation of the protracted course and the incurableness of many of the protozoan diseases.

These facts, indicating an immunization of the invading organism against the body fluids, are exactly in accord with the hypothesis advanced by Dr. Welch in the Huxley lecture in 1902. He called attention to the possibility of the living bacteria in the host casting off receptors as a result of the stimulation of the body cells, and to the possibility that there may thus rise from bacteria lytic bodies which act specifically on the various cells of the host. The conception is made clear by considering the bacterium as the host and the cells of the body as the invader. The bacterium would thus acquire an immunity against the cells or the body fluids.

In calling attention to this work it should be noted that the author so far has only worked with a few animals, and, therefore, many more experiments must be made before the results given above can be accepted beyond question. The few results obtained are so suggestive, however, that work with this class of animals should be vigorously carried on. The author has devised some very clever means for obtaining the infusoria in pure growths, meaning by this growths of one variety of infusoria, but not free from bacteria, there being always some of the latter of a harmless character in the cultures used. These do not interfere with the inoculation experiments. For the details of these methods the original work should be consulted.

1. Archiv f. Hygiene, vol. liv, p. 1, 1905.

LYMPHATISM AS A FAMILY DISEASE.

As medicine grows older there is a tendency to discard some of the terms formerly used as being either inaccurate or unscientific. In some instances, a term, such as scrofula, has been rightly discarded, because it covered a variety of conditions, due to a variety of causes, and clinically separable. In other cases, terms have dropped into disuse because they were unfashionable or because it seemed that the condition they described was not scientifically proved to exist. Among this last group must be mentioned the so-called diatheses and temperaments about which our professional grandparents were so fond of speaking and which we so rarely mention. We probably tend nowadays in some ways to be too scientific, to discard terms too easily because we can not show actual pathologic evidence that they exist, forgetting that there are many conditions undoubtedly existent, of the pathology of which we are still ignorant. Among the diatheses, the lymphatic diathesis is the only one which seems at present to be on a firm anatomic basis.

We have mentioned before the condition spoken of as lymphatism or the status lymphaticus. It is far from uncommon, and from its association with sudden and mysterious deaths in infants has a medicolegal aspect, as well as a strictly professional one. It will be remembered that children who present this condition of lymphatism are unusually subject to infectious diseases, as is also true of the small proportion of adults who are affected, and that in quite a large proportion of the cases of death from anesthesia the condition is present. Some of the curious cases of death following trivial physical shocks or even fright have also been shown to be associated with the status lymphaticus.

The fact that this condition may exist as a family disease so far has not been especially emphasized, and it has remained for Hedinger[1] to call attention to this aspect of the question. In his article he mentions a family of nine children, five of whom had died suddenly during infancy. In some instances, the child simply became cyanotic, lost consciousness, and was dead in a few minutes. In other cases, the picture was that long ago described by Kopp as thymic asthma. Hedinger cites reports of a number of other observers recording the death under similar circumstances of from two to nine children in single families.

The lesions found in such cases are constant, though varying in degree, and consist of enlargement of the thymus and of the lymphatic apparatus, the latter sometimes affecting single groups of glands, but more often involving also the lymphatic apparatus of the spleen and the intestines. The microscopic lesions resemble in many ways those of an infection, though bacteriologic examination is usually negative.

The pathogenesis of this condition is still very obscure and seems liable to remain so. There is nothing known to account for its appearance in several members of a family. Alcoholism in the parents and consanguinity have both been blamed for this as for many other family conditions. The conditions found, as stated, suggest infection, and the possibility of an autotoxemia has been suggested, but merely on the ground of the histologic resemblance of the lesions in this condition to those of bacterial infection. Possibly some curious change in metabolism, a subject about which we still know so little, is at fault. For the present we must be satisfied with knowledge of the occurrence of the condition and look to the future for an explanation of its cause.

1. Deutsches Arch. für klin. Med., 1905, lxxxvi, 248.

MEDICAL HISTORY ERRORS.

Few things have been more encouraging in recent medical literature than the renewed attention which is being paid all over the world to the history of medicine. Nothing is more chastening than to find how many of the discoveries that are thought to be very modern are only re-discoveries of the principles that were discussed by men many centuries ago, practically applied in their teachings and in their practice and then forgotten because of changes in the theoretic point of view in medicine. Another interesting phase of this subject has been the larger sympathy that has developed for these early workers in medicine and the realization of how much they accomplished and under what apparently discouraging circumstances. Indeed, until recently, when the works of the old masters have been more read, the old-time medical curricula in the universities were so little understood that it was considered that certain phases of scientific medical work were not touched on at all.

Perhaps the most striking example of this is to be found in the impression conveyed by practically all histories of medicine published in English that during the fourteenth and fifteenth centuries there was little or no development of the science of anatomy in Christian Europe because the practice of dissection was under ecclesiastical censure. The supposed decree by which this fatal obstacle to anatomy was created was pointed out very definitely, and it seemed to be clear that it had prevented all dissection. As a matter of fact, however, the history of the fourteenth and fifteenth centuries shows a continuous series of anatomic developments of high order, in spite of the supposed papal legislation against it. Further investigation shows that the decree which was supposed to have forbidden dissection really forbade quite a different practice and on very justifiable grounds. Pope Boniface VIII prohibited the crusaders from cutting up the bodies of their dead friends in the East and boiling them in order to bring the bones home for burial in Europe. It is easy to understand how many serious evils might follow from this unhygienic practice and how eminently commendable was the promulgation of this law. It seems especially unfortunate that it

should have been misconstrued into an attempt to prevent the development of the science of anatomy along the only lines in which such development is really possible—those of actual dissection and practical demonstration.

An examination of the decree itself brings out these facts very clearly and the history of anatomy in the centuries immediately following this promulgation shows the rest. Within a few years after the issuance of the decree Mondino did his great work in dissection in Italy and published a text-book which was the guide for dissectors for nearly two centuries. A corresponding state of affairs has recently been shown to exist with regard to the false impression that alchemy, the mother science of chemistry, was also forbidden by the ecclesiastical authorities. Investigation proves this second supposed decree hampering the development of the great science to be quite as much misconstrued as that with regard to anatomy.

"Alchemies" were forbidden, but it is clearly stated just what chemical processes were intended by the word alchemies. Many of the alchemists pretended to make gold and silver and found a number of dupes who were quite content to give them real gold and silver for the supposed precious metals that they could manufacture. Alchemies of this kind were forbidden, but nothing else. The pope[1] who issued the decree was himself one of the most earnest students of chemistry of the time, doing excellent original work, and published a volume in which he demonstrated the impossibility of the transmutation of metals. Professor Allbutt, in his address on the historical relations of medicine and surgery at the Congress of Arts and Science held at St. Louis in 1904, mentioned a little book on eye diseases written by this same pope, John XXII, which contained some very practical directions in regard to the treatment of ordinary affections of the eye.

The general histories of medicine published in English still continue to repeat these erroneous statements with regard to ecclesiastical interference which did not take place. As a matter of fact, the whole attitude of the ecclesiastics of the time was in favor of the development of scientific teaching of all kinds and they were prominent in their encouragement of universities. The grateful acknowledgment of what was accomplished within these earlier ages and the recalling of it to modern generations will only make clear how slow is human progress and how much even the best advances are likely to sink into obscurity if they are neglected for some passing favorite theory. This of itself should be enough to bring us to do justice to the grand old men of the olden times who accomplished so much with inadequate means, and often under discouraging circumstances, for the development of the sciences whose full fruition was to be delayed for so many centuries.

1. "John XXII and the Supposed Bull Forbidding Chemistry," by James J. Walsh, Medical Library and Historical Journal, vol. iii, No. 4.

THE SO-CALLED MAGIC TOUCH AS OPPOSED TO LABORATORY PRECISION IN DIAGNOSIS.

Regretful surprise is occasioned whenever a respected contemporary lends its support to the minority protest against the revolution in pathology, diagnosis and therapy which laboratory science has effected in medicine during the last three decades and which, as every liberal-minded physician knows, is still on the very threshold of its achievements.

Innovation has always had its obstructionists, reform its opponents. A few years ago a surgeon of prominence, for motives best known to himself, publicly decried the value of laboratory methods as applied to surgical diagnosis. He found a sympathetic audience in those who, for lack of knowledge or from inertia, had been unable personally to acquire the skill and knowledge necessary to apply these methods in their daily work. He attained a notoriety of advertising proportions. Privately, however, this surgeon was forced to admit that he availed himself of many of the laboratory's results in deciding the nature of a given surgical affection. Like all appeals to prejudice, however, his utterances were accepted as sincere and his cue was followed by many imitators. Thus an agitation against laboratory aids in diagnosis was launched.

An amusing feature of this really ridiculous campaign is the constancy with which its advocates are compelled to fall back on their plea for an education of the senses as the *sine qua non* of diagnosis. A recent flowery orator proclaimed to his audience that he taught his students the importance of training the sense of touch, and thus enabled them to render superfluous the microscope, test tube, microtome, culture media, blood-counting apparatus, centrifuge and all the other paraphernalia of the modern diagnostic laboratory. These men forget that our medical forefathers educated their senses to a degree of acuteness unattainable by modern men who have perfected various implements like the stethoscope, ophthalmoscope and fluoroscope to assist the senses which have long since depreciated through various agencies of civilization.

This appeal reminds one of a kind of retrogression in which a premium will be placed on the magic touch, or the laying-on of hands of medievalism, or the persuasive, pocket-emptying "touch" of osteopathic or other manipulating quacks. These pleaders for sense-education seem to forget that good laboratory practice is the most effective training for sharpening the senses, and that it scores its triumphs in the sickroom whenever a laboratory worker chooses to enter the pursuit of clinical medicine or surgery.

To give a detailed account of the achievements of the laboratory in forwarding medicine is a task so laborious as to exhaust one's patience when called on to controvert the claims of those antagonizing progress in this direction. Instances in which the theory and practice of medicine have been revised and uplifted through the

conquests of the laboratory, if enumerated, would pass in review the history of medicine in the last three decades, an era of progress beside which all former periods attain utter insignificance. And this is due not to better training of man's senses, but to the aid these senses have secured through laboratory devices.

THE STATE AND TUBERCULOSIS.

In the present medical and public enthusiasm in regard to the tuberculosis question the duty of the state has been a subject of much discussion, which has in turn led to a considerable amount of actual and proposed legislation. Some of this has been wise, part of it might be wiser. A very fair and sensible review of the subject is given in an address delivered by Dr. J. P. C. Foster[1] of New Haven, Conn., before the Laennec Society of Johns Hopkins Hospital. The measures which he points out as necessary are the scientific supervision of water and milk supplies, rational tenement-house legislation, registration of cases of tuberculosis, control of indiscriminate expectoration, and proper efforts to educate the public in needed sanitary precautions. His remarks in regard to the last named necessity are pertinent and suggestive. He recognizes that there is a tendency to overdo the matter of expense in sanatoria and public care. "The highest claim," he says, "that such institutions have on state support is not in their charitable, but in their educational value."

Even with the model of the Massachusetts State Sanitarium before him he does not seem positive as to the advisability of erecting state institutions. The better way, as he sees it, is in the formation of state antituberculosis associations, which, through private benevolence, should initiate and control the sanatorium movement, and only ask a certain amount of government aid when the usefulness of the institution is assured. This is the plan which has been adopted in Canada and, to a certain extent, in his own state of Connecticut. There will be no lack of private benevolence when the need for it is definitely shown, and it is not necessary that such institutions should be unduly multiplied or expensive. He would make a sanatorium of this kind meet the needs of a population of not less than 250,000, and its work should be mainly educational. It is neither necessary nor desirable that these should be free institutions, but they should receive curable indigent patients of special intelligence who could serve as sanitary missionaries after their discharge.

The vast army of indigent and ignorant consumptives should receive proper care in municipal institutions, in which, if necessary, they could be isolated without causing undue expense. The average consumptive in private life needs education rather than isolation or public care. The intelligent and organized effort that is required properly to bring about the best results is clearly indicated in Dr. Foster's address, and as an object lesson he related what has been successfully done in New Haven and Hartford, where, with an expediture of only $50,000, provision has been made for 100 beds, fully one-half of the number for which the state could justly be called on to contribute, and this absolutely without any political work or interference whatever.

1. Published in the Johns Hopkins Bulletin and Charities and the Commons simultaneously.

THE SEVENTEEN YEARS' WAR FOR PURE FOOD.

The history of the pure-food legislation and the methods and the motives of its obstruction by the Senate are well described by Henry Beach Needham in the *World's Work* for February. He shows that the first pure-food bill was introduced seventeen years ago into the Senate, and that during the past four years substantially the same act has twice passed the House. The obstructive tactics of certain senators and the motives of the leading opponents of the bill are pretty well analyzed. The liquor interest, the patent-medicine business, the cottonseed oil industry of the South (which furnishes most of our imported olive oil) glucose manufacturers, etc., all have their advocates among the Senate leaders, one of the most prominent of whom, who is said to have much control over legislation and to be himself interested in the wholesale grocery business, a fact which "senatorial courtesy" does not allow being mentioned in the Senate debates. He points out that the tactics in the present long session are likely to be somewhat different from those that prevailed last year. If, he says, public clamor shows no signs of abatement the Senate "yields." When the Senate yields, then is the time to watch legislation, for while obstruction is still practiced the chief reliance is on emasculation. "To convert a bill drawn in the interest of the whole people into a harmless measure which 'business' will accept" is then the policy. "Beware of the Senate when it 'yields,' for it has not yielded. The enacting clause of the House bill will be retained, but the remainder of the measure will be the Senate's own make." We must not give the matter up. There is a force of public opinion that can make the Senate yield to some purpose, and the medical profession should have its share in creating it.

TETANUS FROM BLANK CARTRIDGE WOUND.

For several years in our annual Fourth of July tetanus article we have laid particular stress on the necessity for the most vigorous measures in the treatment of blank cartridge wounds when first seen by the physician, and also the prophylactic administration of tetanus antitoxin. The radical nature of the procedures we have advocated, namely the anesthetizing of the patient and most extreme dissection and drainage of the irregular radiating track of the explosive injury, have seemed to many unnecessary. Until one has proved it by dissection it is hard to appreciate how widespread are the effects of the explosion beneath the skin, and without this appreciation it would seem possible to secure adequate cleansing and drainage by fairly free incision and the usual surgical measures. The administration of antitoxin as soon as possible after the injury is received has seemed

to many an unnecessary elaboration of the prophylactic measures. Elsewhere in this issue[1] is narrated a case that seems to us to corroborate the position we have assumed. The patient, with the usual blank cartridge wound in the hand, was given exceptionally thorough surgical care under local anesthesia, including thorough curetting and the use of iodin as an antiseptic. Two days later the wound was again cleaned out, this time under general anesthesia, and from that time until it had healed up it was treated most thoroughly under the best surgical methods. Yet in spite of all this care, tetanus developed on the fourteenth day. We agree with the reporter of the case in ascribing the successful outcome to the thorough mechanical cleaning and free drainage of the wound, which undoubtedly tended to make the severity of the infection much less than it would have been under less vigorous treatment. At the same time it emphasizes the fact that tetanus is not an ordinary surgical infection that can be met by the same methods of treatment that are successful in preventing infection with other organisms. As in this case, infection with other bacteria may be avoided, and healing take place aseptically, but deep in some hidden corner the tetanus bacilli or spores may hide, uninjured by any antiseptics that may reach them, capable of multiplying and killing the patient at the first favorable opportunity. If thorough surgical treatment is instituted with every such injury the incidence of tetanus as a Fourth of July sequence will be enormously lowered, but to secure the final complete success it is necessary to go beyond ordinary surgical methods and to administer a prophylactic injection of antitoxin—only in this way can we make sure of avoiding tetanus altogether.

ANOTHER STEP TO PROTECT CHILDHOOD.

As the result of an interesting trial three Chicago saloon-keepers were recently ordered to pay $17,500 damages to some children for injury done them by reason of the repeated intoxication of the father through liquor sold by the saloon-keeper. The law which recognizes the principle that a liquor seller, in selling or giving intoxicating liquors to a habitual drunkard, injures the person, property and means of support of dependent children has in it possibilities of much good. An important social problem of the dependent in our cities is vitally connected with intemperance, and every influence is needed which can be brought to bear on this etiologic factor. We have to provide hospitals, asylums and agencies of relief to repair the damages done to individuals and to society, and more verdicts such as the one above referred to would have the double effect of checking the cause and of relieving the result.

ANOTHER JUDGE DEFINES PRACTICE OF MEDICINE.

We are privileged to add to the collection of erratic definitions of the practice of medicine one by Justice Joseph M. Deuel, who remarks that the practice of medicine consists of three things—diagnosis, discovery of the cause, and the cure by drugs, and that if a doctor does not prescribe drugs he is not practicing medicine. *American Medicine* very brightly remarks: "This must be wormwood and gall to the therapeutic nihilists, and it should stimulate our pharmacologists and therapeutists to renewed activity in their efforts to restore their special science to its at one time pre-eminence. In the meantime, the surgeon who reduces a dislocation and the physician who cures a tuberculous patient with cold air and good food, are not in the practice of medicine at all. It is difficult to comment temperately on such a blow at the medical profession; indeed, it is not possible to follow out the mental processes which result in such a conclusion." We may call attention to the fact that some light is thrown on the mental processes of the judge by the fact that he is the one whose character and practices were laid bare by the exposures in the recent libel suit in which *Collier's Weekly* was vindicated for its attack on the vile *Town Topics*.

BRITISH CONTROL OF MISCONDUCT.

The British General Medical Council, the central body of which regulates medical practice in Great Britain, has issued a notification that any practitioner who resorts to advertising and canvassing methods renders himself liable to be charged under the medical act with "infamous conduct in a professional respect" and with erasure of his name from the register of local practitioners of medicine. The phraseology has an ugly sound, but it seems to us to fit the offense. Unfortunately in this country not all our state boards are legally qualified to follow this British precedent. There are without question many illegal advertising quacks in Great Britain, but it is a satisfaction that they are legally infamous as such, and their social and business standing must be more or less affected, even if their activities are not entirely squelched. It does not take much search of the advertising columns of the secular press in this country to find plenty of evidence of "infamous" quackery in every sense of the word. We wish that the British rule could be enforced here.

THE SPITTING HABIT.

In spite of the rather spasmodic enforcement of antispitting regulations, there are some valuable results of the agitation. Many spitters have been led to see themselves as others see them and have reformed to a certain extent. The promiscuous spitting that used to be common in cars and in public places is certainly lessened and the improvement is still progressing. A Rochester (N. Y.) paper says that the educational effect of the agitation has been marked in that vicinity. The work of the enactments, so far as they have been made, has been mainly educative, the few instances of their enforcement serving mostly to point a moral. There is a certain class of mankind to whom only penalties will appeal, but for the great mass of approximately decent people the agitation of the subject is constantly being more and more effective. The bad habit of spitting in public places bids fair to be before long a thing of the past.

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Medical News

ALABAMA.

Personal.—Dr. Lucian A. Spencer, Bessemer, was severely injured January 13 in a collision between his buggy and a delivery wagon.

Doctor's Office Destroyed by Fire.—On January 17 fire originating in an adjoining building destroyed the office of Dr. Samuel C. Tatum at Center. The damage is estimated at $200.

Society Elects Officers.—At a meeting of the Dallas County Medical Association, held in January, the following officers were elected: President, Dr. William W. Harper, Selma; secretary, Dr. Barney B. Rogan, Selma; treasurer, Dr. Clement Ritter, Selma, and censors, Drs. Samuel G. Gay, Clement Ritter, W. McLean Pitts, William W. Harper, all of Selma, and Dr. Joseph M. Donald, Harrell.

DISTRICT OF COLUMBIA.

Personal.—Dr. S. O. Richey, who has been ill for some time, has returned to the city fully restored to health.——Dr. William R. Moulden, formerly resident physician at Bilibid prison, Manila, P. I., has returned to Washington.

Health of the District.—The report of the health officer for the week ended January 20 shows that there were 118 deaths, 67 white persons and 51 colored. The following cases of contagious diseases were reported: Diphtheria, 38; scarlet fever, 35; typhoid fever, 56; smallpox, 20.

Health Employes to Take Vacations in Winter.—Dr. William C. Woodward, health officer of the district, in his report to the commissioners, states that the natural desire of the employés of the department to take vacations during the summer months interferes with the work of the department. He advises either dividing the vacation period into two terms, only one of which may be between June 1 and September 30, or allowing employés to take the entire vacation of thirty days during the winter months.

ILLINOIS.

Illegal Practitioner Sentenced.—"Prof." J. R. Braun, Hillsboro, charged with violation of the medical practice act, was found guilty January 24 and sentenced to pay a fine of $100 and, in default of payment, was committed to jail.

A New Society.—The Eastern Illinois Ophthalmological and Otological Society was organized at Champaign January 16. At a meeting to be held in Decatur, March 6, permanent officers will be elected and the organization perfected.

Evanston Is Healthy.—The health commissioner of Evanston announces in his annual report 209 deaths in a population of more than 23,000, or a little less than 9 per 1,000. Pneumonia and heart disease each caused 20 deaths; tuberculosis, 19, and cancer and old age, each 15.

Physician Wins Suit.—In the suit of Charles Yeager, a butcher of Belleville, against Dr. Arthur M. Kohl, in which the plaintiff claimed $5,000 damages on account of the closing of his place of business, confiscation of his stock and his own confinement in the county contagion hospital on account of smallpox with which he claims he was not afflicted, the jury returned a verdict for the defendant.

Personal.—Dr. Baker, Congerville, has purchased the practice of Dr. Eric W. Zook, Dunlap.——Dr. Reinhardt Rembe, formerly a practitioner of Bloomington, but for the last five years a resident of Munich, Germany, is spending the winter in America.——Dr. W. E. Schowengerdt, Champaign, is seriously ill with typhoid fever.——Dr. William H. Scott, Dallas City, was thrown from his buggy in a runaway accident January 23 and sustained severe bruises of the face.

Chicago.

Hospital Dedication.—The new Washington Park Hospital at Sixtieth Street and Vernon Avenue was dedicated by a charity bazar, held on the evenings of January 31 to February 3 inclusive.

For Sick Children.—At the performance of "Babes in Toyland," January 29, the proceeds of which was given to the Children's Hospital Society at Chicago, the net receipts amounted to $3,500.

Newberry Medical Library Sold.—The trustees of the John Crerar Library completed arrangements February 5 whereby the medical department of the Newberry library will be transferred to their new building when it is completed. During the intervening time they will have charge of the immense collection in its present quarters in the Newberry Library building.

Deaths of the Week.—For the week ended February 3 the total deaths were 557, equivalent to an annual mortality of 14 per 1,000. Pneumonia caused 103 deaths; consumption, 68; Bright's disease, 42; violence, including suicide, 40; heart diseases, 39; intestinal diseases, 32, and cancer, 31.

A Banquet to Baron Takaki.—A banquet is to be given on the evening of February 10 to Surgeon-General Takaki of the Imperial Japanese Navy (retired) by Dr. Nicholas Senn, at which, in addition to the guest of honor and Dr. Johichi Takamine, the Senn Club and representatives of the medical departments of the Army, the Navy, the Public Health and Marine-Hospital Service and the Illinois National Guard will be present.

Again Convicted.—Dr. Francis M. Steward was convicted January 29 of robbery. Felix Barard, the complainant, stated that he was met on the street by a "capper" and invited to the office of Dr. Steward for free examination, at the conclusion of which he was informed that he had a number of serious diseases and that his bill was $110, which he had to pay or leave his clothes. The previous conviction of Dr. Steward was for a similar offense in 1897. The defendant moved for a new trial and was released on bonds of $6,000.

IOWA.

New Hospital.—The old Christian church at Charles City has been sold to Dr. J. H. McLeod, who will repair the building and fit it up as a hospital.

Addition to Hospital.—The new building of St. Joseph's Hospital, Keokuk, erected at a cost of about $30,000, was turned over by the directors January 20.

Asks Definition of Vaccination.—The State Board of Health has asked the legislature to define "vaccination" as prescribed in the law requiring all school children to be vaccinated. The point at issue is whether the so-called internal vaccination practiced by certain homeopaths is or is not to be considered as vaccination.

State Inebriety Hospital Opened.—The Detention Hospital for Inebriates, Knoxville, was opened January 18. Hereafter all dipsomaniacs will be committed to this institution instead of to insane hospitals, except that women inebriates will still be committed to the State Hospital at Mount Pleasant. Dr. O. C. Wilhite has been made superintendent of the institution, and Dr. W. S. Osborne of the Cherokee State Hospital has been made assistant superintendent.

Polk County Medical Society.—This society held its annual meeting at Des Moines and elected the following officers for the ensuing year: President, Dr. A. C. Page; vice-president, Dr. G. D. DeYoung; secretary, Dr. C. A. Ayres; treasurer, Dr. Clifton Scott; censor, Dr. J. W. Cokenower. The society instructed the secretary to send a telegram to Congressman Hull indorsing the pure food bill now before congress, and requesting him to use his efforts toward its passage. A committee of three was appointed to confer with local school boards regarding sanitation in public schools. The present membership of the society represents 85 per cent. of the eligible practitioners of Polk County.

Personal.—Dr. Guy Ramsey, North Liberty, was seriously injured in a collision between his sleigh and a trolley car January 9. Dr. Ramsey's hip was badly fractured, but it is not believed that he sustained internal injuries.——Drs. B. M. Howland, Melbourne, and E. M. Singleton, Marshalltown, have been selected as physicians of Marshall County.——The office of Dr. Fox, Calendar, was destroyed by fire January 18.——Dr. N. McKitterick, Burlington, has resigned as president of the Des Moines County Medical Society.——By the will of Mrs. Jessie M. Bishop, her residence in Charles City, valued at about $10,000, is bequeathed to her physician, Dr. A. R. Brackett.——Dr. H. S. Patterson, Elkader, has been reappointed a medical member of the commissioners of insanity.——Dr. Frederick E. Welch, Rutland, was operated on for gallstones in Mercy Hospital, Chicago, January 1, and is making rapid progress toward recovery.——Drs. H. O. Conaway, Oskaloosa, and J. C. Farrell, Barnes City, have been appointed physicians for Mahaska County.

MARYLAND.

New Hospital for Northern Maryland.—A new hospital was opened in the northern section on February 1; it is known as St. Luke's and accommodates twenty patients, but will be enlarged shortly. The incorporators are Drs. C. K. Jump, E. Z. Cole, Charles L. Rumsey, William Dulany Thomas, George E. Houck, John A. Evans, Bowman M. Hood, William M. Pannebaker, O. E. Murray, J. W. Wisner, B. C. Catlin and H. H. Stansbury. Dr. William Dulany Thomas will be superintendent.

Society Elects Officers.—At the annual meeting of the Talbot County Medical Society, held at Easton January 31, the following officers were elected: President, Dr. Julius A. Johnson, Easton; vice-president, Dr. Edward R. Trippe, Easton; secretary, Dr. Philip L. Travers, Easton; censors, Drs. Kennedy Wilson, Tilghman; Samuel C. Trippe, Royal Oak; Charles H. Rose, Cordova; delegate, Dr. James A. Stevens, Oxford. There was a good attendance, and addresses were made by Drs. R. T. Taylor, Thomas Cullen and Levis M. Allen, of Baltimore.

Baltimore.

Births and Deaths in January.—During January 906 deaths and only 735 births were reported. Several deaths from grip were reported during last week.

Course of Study to be Lengthened.—The authorities of the Johns Hopkins University are considering the question of lengthening the course in the collegiate department from three to four years and that in the medical school from four to five years.

Portrait of President Remsen for Johns Hopkins University.—A full-length portrait of President Ira Remsen of the Johns Hopkins University has been painted by his son, Ira M. Remsen, formerly a student at Johns Hopkins and now an artist in New York City. It is said to be intended as a gift to the university.

Personal.—Dr. William Osler left Baltimore on January 30 for Canada after a stay here of three and one-half weeks. He will spend several days with his mother and will then return to New York and sail for England. He read a paper at the Johns Hopkins Hospital Historical Club January 29 on John Radcliffe, who established the Radcliffe Library at Oxford in 1740.——The real and personal estate of the late Dr. Charles C. Shippen is appraised at $164,965.

MASSACHUSETTS.

City Protests Against Pollution of River.—The city of Waltham has protested before the committee on public health against the introduction into the Charles River of sewage and waste by the manufactories and town of Milford, which is 60 miles upstream.

Brookline to Have a Municipal Gymnasium.—The town of Brookline, "the richest town in the world," has voted $100,000 to build a new municipal gymnasium. It will be located on the square where already face the high school, manual training school and the free public bath house.

Lectures on Medical Jurisprudence.—Ezra R. Thayer, LL.B., is to give four lectures on the physician's relations to the law and the courts at Harvard Medical School on Monday evenings at 8, beginning February 12. The lectures are open to medical students and to members of the profession.

Height of Buildings.—Another bill introduced in the Massachusetts legislature affecting the health of cities provides that all buildings hereafter erected outside of Boston shall be not more in height than one and one-fourth times the width of the street on which they stand and none over 125 feet high. Some such law prevails in Paris.

Boston.

Mayor Finds Fault with Milk Inspectors.—Mayor Fitzgerald of Boston has found fault with the milk inspectors employed by the Board of Health, with the result that two of them have been suspended.

Testimonial to a Trustee's Work.—A letter of hearty appreciation has been sent by sixty-nine medical men to Hon. Henry H. Sprague, a trustee of the City Hospital, accompanied by a silver bowl and platter appropriately inscribed. The letter commends Mr. Sprague's character, energy and fidelity in his thirty years' service as trustee.

Protection of Food from Contamination.—The Woman's Health Club has petitioned the State Board of Health to make regulations for protecting food offered for sale in public places from contamination. Dust, flies, odors, excrement of dogs, cats and mice, and indiscriminate handling are all shown to be real dangers, especially to the food sold to poor people.

Personal.—Dr. David Cheever, son of Dr. David W. Cheever, has been appointed third assistant visiting surgeon to the Boston City Hospital. His father was one of the six surgeons first appointed to the staff of the hospital in 1864, when the institution was opened.——Dr. James J. Scannell has been appointed assistant bacteriologist. The other men have moved up since the departure of Dr. H. W. Hills, and now the laboratory is in charge of B. R. Ricards, S.B., assisted by Dr. Francis H. Slack.

The New England Deaconess Hospital.—Though this institution has only 14 beds, it cared for 234 patients last year, 1,763 during the ten years since it was started. Twenty-five deaconesses made 20,865 calls in the year. Of the work done one-third is gratuitous. Sufficient funds have at last been secured to guarantee the starting of the new hospital building in March. This is to be near the great group of medical school and hospital buildings in Longwood.

MISSOURI.

Alumni Election.—The Medical Society of the City Hospital Alumni of St. Louis elected Dr. L. H. Behrens, president; Dr. W. Baumgartner, vice-president; Dr. F. J. Taussig, secretary, and Dr. Jules Brady, treasurer.

Election of Officers.—The election of the St. Louis Medical Society resulted as follows: President, Dr. George Homan; vice-president, Dr. Robert Barclay; secretary, Dr. Hart Goodloe, and treasurer, Dr. Charles J. Orr.

Personal.—Dr. R. B. Gradwohl, St. Louis, announced at the meeting of the St. Louis Medical Society, February 3, the discovery of a new species of intestinal parasites, probably belonging to the *Oesophagostomum* family of the *Sceerostoma*.——Dr. George Harron, at the same meeting, reported an interesting case of hookworm disease observed in Missouri, but contracted in Alabama.——Dr. and Mrs. Richard L. Sutton, Kansas City, sailed for Liverpool January 13 for a trip of two years abroad.——Dr. and Mrs. John H. Duncan, St. Louis, sailed for Europe February 1.——Dr. Guy L. Noyes has succeeded Dr. Edward W. McAlester as superintendent of Parker Memorial Hospital, the hospital of the medical department of Missouri State University, Columbia.

NEW JERSEY.

Personal.—Dr. Harry H. Pemberton of Long Branch was shot but not seriously injured by his daughter, January 29. The daughter was subsequently examined by physicians and pronounced to be insane.

NEW YORK.

Mortality in the State.—The State Department of Health reported 137,059 deaths in this state last year. These, together with 175 delayed returns, made a death rate of 17.4 per 1,000, or about the average for the past five years. There was a daily average of 376 deaths, against 380 in 1904 and 350 in 1903. Pneumonia was the chief cause of death, causing 14,157 deaths in 1905, against 13,531 in 1904, and 9,000 in 1903. Consumption caused fewer deaths than pneumonia. The mortality from cerebrospinal meningitis was 2,566, against 1,700 in 1904, the average being in former years 550. Diphtheria had the smallest mortality of any year on record. Typhoid fever had fewer deaths than in the two years preceding. Smallpox occurred in only a few localities and the nine deaths were all in the maritime district. Epidemic diseases caused 13.5 per cent. of the mortality. Consumption caused 10 per cent. of the deaths, and 175 deaths per 100,000 population in the maritime districts. The infant mortality was 27.5 per cent. of the total, being 1,000 less than last year. There were 24,000 deaths of individuals past the age of 70. Bright's disease caused 8,870 deaths; in 1902 this disease caused 6,818 deaths; in 1903, 7,674; in 1904, 9,068.

Buffalo.

Personal.—Dr. Marcel Hartwig was recently operated on at the Johns Hopkins Hospital, Baltimore.——Dr. Roswell Park, who has been confined to his home by illness, is rapidly convalescing.

Hospital Elections.—The Buffalo Emergency Hospital staff at its annual meeting elected the following officers: President, Dr. Francis J. Carr; vice-president, Dr. Vertner Kenerson, and secretary, Dr. Edgar A. Forsyth.——The Buffalo Hospital Sisters of Charity held the annual meeting and elected the following officers: President, Dr. George H. Westinghouse; vice-president, Dr. Walter D. Greene, and secretary, Dr. Alfred E. Diehl.

New York City.

Harvey Society Lecture.—The eighth lecture in the Harvey Society course will be delivered by Prof. L. B. Mendell at the New York Academy of Medicine on Saturday, February 10, at 8:30 p. m. Subject, "The Formation of Uric Acid."

Smallpox at Quarantine.—The Fabre line steamship *Roma* was detained for several hours because one of her steerage passengers was ill with smallpox. Three hundred and fifty passengers who were in the same compartment were detained at Hoffman Island for observation.

A New Catalogue.—The New York Academy of Medicine has just issued a catalogue containing the acts of incorporation, constitution and by-laws, a list of fellows, associate fellows, honorary fellows, benefactors, and a complete list of fellows from the institution of the Academy, Jan. 6, 1847, to Jan. 1, 1906.

Fire in Bellevue Laundry.—Eight hundred patients were endangered by a fire in the laundry building connected with this hospital early on the morning of January 30, but owing to the quiet and effective work of the hospital fire brigade and the city firemen only a few patients were awakened, and the damage does not exceed $1,000.

Beginning New Bellevue.—Two brick pavilions on the southeast corner of the grounds have been emptied of patients and will be razed. This is the first step in the erection of the new hospital for which $8,500,000 has been appropriated. The consumptive patients have been sent to the Metropolitan Hospital while the others will be cared for in tents.

Musicale for Hospital.—A musicale was held Monday evening, February 5, for the benefit of the Williamsburg Hospital, in Brooklyn. This hospital has been open to the sick poor for the past sixteen years and this is the first appeal to the public for money, though the demands on the hospital have been very great, and of late many needed improvements have been made at great expense.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending January 27, 1,468 cases of measles, with 34 deaths; 404 cases of tuberculosis, with 178 deaths; 348 cases of diphtheria and croup, with 41 deaths; 226 cases of scarlet fever, with 16 deaths; 29 cases of typhoid fever, with 5 deaths; 23 cases of cerebrospinal meningitis, with 16 deaths, and 215 cases of varicella; a total of 2,713 cases and 290 deaths.

Public Hospitals Commission.—Mayor McClellan has appointed a commission to reorganize the administrative methods of the public hospital system of this city. The city is about to expend a large sum of money for the extension of the public hospital system and it is the mayor's idea that the whole system should be brought under one controlling body. The commissioners of charity, health and tenement house departments and the president of Bellevue and the allied hospitals are among the members of this commission. In a letter to the new commissioners the mayor has asked them to consider the problems presented by existing methods of administration and to propose such remedies as may be necessary to correct the defects of the present system. They are asked to inquire after the future needs of the city in regard to caring for the sick poor so that adequate provision may be made for carrying on this work. A report is requested so that if necessary legislation may be secured to give the city a better system than that under which it now works.

NORTH CAROLINA.

General Hospital for Raleigh.—A movement is on foot in Raleigh, headed by Dr. Hubert A. Royster and backed by the board of trade and leading citizens, to secure a large general hospital for the city.

Tri-State Society.—The eighth annual session of the Tri-State Medical Association of Virginia, North Carolina and South Carolina will be held at White Stone Lithia Springs, S. C., February 27 and 28.

Society Elections.—The Iredell-Alexander County Society has elected officers for 1906 as follows: President, Dr. E. E. Kluttz, Troutmans, and secretary, Dr. John E. McLaughlin, Statesville.——The Haywood County Medical Society has elected the following officers: President, Dr. J. Rufus McCracken, and secretary, Dr. J. Howell Way, both of Waynesville, N. C.

New Superintendent.—At the meeting of the trustees of the State Hospital for Colored Insane, Goldsboro, January 24, Dr. William W. Faison, for some years first assistant physician, was elected superintendent in place of Dr. John F. Miller, deceased. Dr. Faison is well qualified and has rendered the hospital excellent service for several years past. His election was unanimous, Drs. Cobb and Jordan, the other leading candidates, withdrew in his favor before the election was held.

OKLAHOMA.

Physicians as Mayors.—Three or four of the largest towns of Oklahoma and Indian Territory have elected physicians in active practice as mayors during the past year.

Personal.—Dr. Ulbus L. Russell, Oklahoma City, returned from London, December 29.——Dr. H. Coulter Todd, Oklahoma City, who is now at Moorfield's, London, returned February 1.

Hospital News.—The Mangum Hospital was destroyed by fire November 22.——The crowded condition of St. Anthony's Hospital, Oklahoma City, has been relieved by the recent opening of the large addition to the old building.

PENNSYLVANIA.

Personal.—Dr. Warren F. Klein, Lebanon, has been appointed a member of the local board of medical examiners by the commissioner of pensions, vice Dr. Charles L. Miller, resigned.

Philadelphia.

Statue of Dr. Leidy.—On February 1 council's committee on city property acted favorably on an ordinance granting permission for the erection of a statue to Dr. Joseph Leidy on the City Hall plaza.

Medical Alumni Meeting.—The medical alumni of the University of Pennsylvania will give their annual banquet February 21. Dr. Wharton Sinkler, representing the board of trustees as well as the medical alumni, will preside, and Dr. George E. de Schweinitz will be toastmaster.

Malpractitioner Sentenced.—"Dr." Mary Roberts, charged with performing a criminal operation, was sentenced by Judge von Moschzisker, January 30, to three years' imprisonment. Mrs. Roberts is the wife of William Roberts, who was sentenced to seven years' imprisonment in Boston for complicity in the murder of Susan Geary, the victim of the dress-suit case tragedy.

Hospital Reports.—During January 63 patients were under treatment at the Kensington Hospital for Women. There were 27 patients in the hospital January 1, and 29 are still under treatment.——The Germantown Hospital admitted 132 patients in January and discharged 92, the number remaining on February 1 being 85. During the month 1,700 cases were treated in the dispensary.

Bequests.—By the will of the late Nannie M. Fitler the Philadelphia Home for Incurables will receive $5,000 for the establishment of a free bed in the women's cancer ward; the will also devises $10,000 to Dr. Charles S. Mills.——The will of the late Nicholas Lenning contains bequests of $10,000 for the Maternity Hospital, $5,000 for the Philadelphia Dispensary, and $5,000 for the Sanitarium Association.

Personal.—Dr. William W. Keen was a guest of honor at the annual banquet of the Bucknell Alumni of Philadelphia, at the University Club, February 1.——Dr. Theodore H. Weisenburg has been appointed secretary of the Section on Nervous and Mental Diseases of the American Medical Association for the ensuing year, to take the place of Dr. David I. Wolfstein, Cincinnati, who is ill.——Dr. Edward H. Nichols, Boston, gave an illustrated address to the Philadelphia Pathological Society, February 8, on "The Pathology of Chronic Non-tubercular Arthritis."——Dr. and Mrs. Oliver P. Rex sailed from New York for a cruise to the Mediterranean and the Orient, January 30.——Dr. and Mrs. Alexander Williams Biddle will leave for Japan next month.

Health Report.—The total number of deaths from all causes reported during the week aggregated 751, a decrease of 12 from the number reported last week, and an increase of 33 from the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 21; measles, 26; whooping cough, 7; diphtheria, 13; tuberculosis, 55; cancer, 21; apoplexy, 20; epilepsy, 4; heart disease, 51; acute respiratory disease, 127; enteritis, 29; Bright's disease, 40; old age, 7; suicide, 3; accidents, 17, and marasmus, 4. There were 509 cases of contagious disease reported, with 34 deaths, as compared with 476 cases and 31 deaths. There was a slight increase of typhoid fever during the week, 344 cases, with 21 deaths, being reported, as compared with 339 cases and 17 deaths in the preceding week.

Efforts for Sanitary Trolley Cars.—Dr. Coplin, director of public health and charities, has instituted general inspection of the street-car service of the city for the purpose of framing regulations to protect public health against dirty, overcrowded and poorly ventilated cars. In a letter submitted to the chief of the health department he requests a careful examination of all trolley cars, and the report to be submitted to the department containing such information as may come within their personal observation, particularly on the following points: General cleanliness.—In case any car is in a condition believed to be prejudicial to public health the officer shall transmit to the chief medical inspector the license and running number of the car, the line, the date and hour when the observation was made, and the points between which the reporting officer was a passenger; and the officer shall state in

detail the condition believed by him to be detrimental to public health. Spitting.—In case any officer of the bureau of health observes evidence of spitting in public cars he shall report the conditions under which the observation was made, as indicated above; whether the conductor could have easily determined the fact that this violation had occurred, and whether the conductor made an effort to suppress the nuisance. All noisy, rattling cars are also to be reported.

WISCONSIN.

New Hospital for Appleton.—Dr. Albert M. Freund is erecting a private hospital on Superior Street, which will probably be ready for patients in the spring.

Proposed Tuberculosis Sanitaria.—A movement is reported to be on foot to establish a sanitarium in Milwaukee for the treatment of tuberculosis. A similar movement is contemplated in La Crosse.

New Home for Epileptics in Milwaukee.—The Riverside Sanitarium property on Humboldt Avenue is to be used by members of the various Lutheran congregations as a home for epileptics and feeble-minded individuals.

GENERAL.

Fraudulent Solicitor Arrested.—H. Fred Mace, a fraudulent solicitor of magazine subscriptions and of subscriptions to THE JOURNAL, regarding whom a warning was issued in THE JOURNAL, January 27, has been arrested in Los Angeles. Any physicians who have been victimized by this individual are requested to communicate with Mr. James Horsburg, Jr., assistant general passenger agent, Southern Pacific Railway, 431 California Street, San Francisco.

Rockefeller Institute Scholarships.—The Rockefeller Institute for Medical Research offers for 1906-07 scholarships to assist investigations in experimental pathology, bacteriology, medical zoology, physiology and pharmacology, and physiologic and pathologic chemistry, to be carried on in the laboratories of the institute in New York City. The value of these scholarships ranges from $600 to $1,000. They are open to men and women who are properly qualified to undertake research work in any of these subjects and who will devote their entire time to it. Applications and credentials should be in the hands of the secretary of the Rockefeller Institute, Dr. L. Emmet Holt, 14 West Fifty-fifth Street, New York City, not later than April 1, 1906. The announcement of the appointments is made about May 15. The term of service begins preferably on October 1, but, by special arrangement, may be begun at another time.

Report of the Recent Yellow Fever Epidemic in Cuba.—The local board of health of Havana has issued a report of the recent yellow fever epidemic in Cuba. The report states that the most likely source of infection was undoubtedly New Orleans, where the disease had prevailed since July. Once a week a steamer made direct trips between New Orleans and Havana, covering the distance in less than three days, with the aggravating circumstance that it was never fumigated at either port, and that during its stay at New Orleans it was tied to a wharf situated in one of the most severely infected quarters of that city. In Havana the measures taken against those steamers consisted in forbidding their approach to the wharves and only allowing cargo to be taken from or into the vessel in lighters by means of immune persons. All persons not immune were held in strict quarantine for five days. Immune passengers, on the other hand, were allowed to land without restrictions of any kind. While the disease is practically wiped out, the report goes on to state that it would be a grave error to think that all preventive measures may be omitted, as sporadic cases may still be expected to occur; some of them so mild that the diagnosis might be difficult or even impossible on purely clinical data. Attention is called to the necessity for continued vigilance and for the destruction, so far as possible, of all mosquitoes and their breeding places.

Health Report of the Philippines for September.—The report of the Board of Health for the Philippine Islands for September states that during the month 692 births were registered and 1,068 deaths. Of the births 368 were males and 324 females. The most prevalent causes of death were, in the order of their frequency: Convulsions (under 5 years), 245; tuberculosis of the lungs, 128; Asiatic cholera, 126; diarrhea and enteritis (2 years and over), 72; meningitis, 58; acute bronchitis, 56; beriberi, 38; dysentery, 36; congenital debility, icterus, etc., 31; chronic diarrhea and enteritis (under 2 years), 29; chronic bronchitis, 25; senile debility, 20; diarrhea and enteritis (under 2 years), 17; tetanus, 14; organic disease of the heart, 13; malarial fever, 12; chronic rheumatism and gout, 8; bronchopneumonia, 8; acute nephritis, 8; chronic nephritis, 7; congestion and hemorrhage of the brain, 7; intestinal parasites, 6; typhoid fever, 5; tuberculosis of the meninges, 5; angina pectoris, 5; leprosy, 4; pneumonia, 4; puerperal hemorrhage, 4; accidental traumatism, 4; accidental electrocution, 4; malarial cachexia, 3; purulent infection and septicemia, 3; tuberculosis of the abdomen, 3; cancer and other malignant tumors of other organs not specified, 3; anemia, chlorosis, 3; acute endocarditis, 3; pulmonary congestion, 3. There was one case of smallpox, with no deaths registered during the month. There were two cases of bubonic plague, with two deaths.

FOREIGN.

Accidents in British Coal Mines.—Though there were 62 fewer separate fatal accidents in the coal mines of Great Britain and Ireland in 1905 than in the previous year, the deaths increased by 95, the figures being 1,150 as compared with 1,055 in 1904.

Exhibition of History of Medicine in Art and Crafts.—Dr. Holländer of Berlin (No. 3 Kleiststrasse), is in charge of the historical exhibit which is to be one of the features of the festival inauguration of the Empress Friedrich House at Berlin, the center for postgraduate instruction. The exhibit is to be opened this month and continue to the middle of April.

Rinecker Prize Goes to Overton.—The triennial Rinecker prize given by the medical faculty of Würzburg, Germany, was awarded this year to E. Overton, assistant at the Würzburg Institute of Physiology. His researches on the osmotic properties of cells, the mechanism of narcosis and the importance of the mineral elements for the functions of the cells have attracted much attention among physiologists.

The Queen of Portugal and the International Medical Congress.—Queen Amelie of Portugal is interested in nursing and in medicine and took a course of instruction in these subjects a few years ago. The Lisbon faculty of medicine conferred an honorary degree of medicine on her in token of appreciation of her interest in science. It is now stated that she has been appointed honorary president of the approaching International Medical Congress, which opens at Lisbon, April 19.

Official Medical Fees in Case of Industrial Accidents.—THE JOURNAL in its issue for January 13, page 141, gave the text of the recent French decree regulating the medical fees in case of industrial accidents. It went into effect last November. Previous to that date the remuneration of the physician attending a workingman injured while at work was the same as that paid by the authorities for medical care of the indigent. The *Semaine Médicale* took the lead in calling the attention of the authorities to the injustice of this remuneration. The workingman is not a pauper, and the employer should pay for his treatment accordingly. The result was the promulgation of the decree referred to which was first published in full in the *Semaine Médicale* for October 11.

The Physicians of Germany.—Heimann compares the statistics for 1905 with those of other years in regard to the number and distribution of physicians in Germany, his article appearing in the last number of the *Deutsche med. Wochft.* for 1905. The total number in the empire is 31,041. Greater Berlin has 3,970; Berlin proper has two less than last year. More than one-eighth of all the German and one-fifth of all the Prussian physicians live in Berlin. In 1905 throughout the empire only 1,057 medical graduates received the state "approbation" which entitles them to practice as regularly qualified physicians, and in Prussia only 362. The corresponding numbers in 1900 were respectively 1,384 and 662. The number of medical students enrolled has dropped from 8,986 in 1890 to 6,288 in 1905.

Records of Details in Regard to Operations.—A letter from Vienna in the *Münch. med. Wochft.* states that the minister of the interior has recently decreed that in all private hospitals and clinics the names of the operator and of the assistants, both medical and lay, must be recorded for each operation. It is possible that the measure may be extended to include the public hospitals. The motive for the decree was a suit brought on account of the death of a woman who had been operated on a few weeks before in a Vienna hospital. A sponge was found in her abdomen, left from the operation, and a suit for damages was instituted. The suit had to be dismissed, as the authorities were unable to discover who was the responsible party, there being no record of the person in charge of the instruments and sponges at the operation.

Tuberculosis and Workingmen's Insurance in Germany.—Their statistics for the German empire during the years 1900-1904 have just been published by the societies for compulsory

insurance of workingmen against sickness. They show the money received and paid out for sanatoria, hospitals, building loans, etc., the number of sick treated and the results of treatment, both immediate and remote. In a communication in the *Deutsche med. Wochft.* No. 52, Wagner comments on the figures presented, remarking that they show again the terrible extent to which the working classes are decimated by tuberculosis. The results of treatment are constantly growing better, however, and the only hope, he thinks, is in the extension of the sanatorium movement. He notes that the cures realized in tuberculous women are more apt to be permanent than in men.

German Society for Total Abstinence Among Physicians.—This long established society has now decided to issue reports addressed to the medical press to keep the medical journals informed in regard to matters affecting the liquor question from the medical point of view, and also in regard to the movement for total abstinence among physicians at home and abroad. The reports are to appear as material accumulates, and are sent out as a "Korrespondenz-Blatt," edited by Dr. Arnold Holitscher of Pirkenhammer. The first number contains a warning against a new German periodical *Das Leben*, which was founded by the brewery interests but masquerades as a scientific journal. It was able to secure articles from Ewald, Goldscheider, Litten and other prominent scientists for its first numbers. Their articles were altered in such a way as to make them an endorsement of alcohol, in some instances absolutely contradicting the authors' well-known views.

Child Mortality in London.—The report of the medical officer of the London County Council has just been made public, and in regard to the mortality among infants and young children provides some instructive reading. It is a matter of more or less common knowledge that about 20 per cent. of children born in most cities are doomed to death owing to the conditions under which they are born. This, however, has been generally regarded as to a large extent, a terminating evil. According to the report issued recently, "the adverse environment which slaughters one in five of the infants born has a maiming effect on those left." There has been a tendency to look on a high death rate of infants as a natural weeding out of the unfit, leaving the strong ones to survive in order to propagate a hardy race. This view can no longer be held, as experience has shown that many of the survivors are liable to develop into weaklings, and frequently to become progenitors of useless children.

International Laryngo-Rhinological Congress as Memorial to Turck and Czermak.—The Vienna Laryngological Society ("Wiener laryngologische Gesellschaft") is sending out an appeal to all interested in laryngology and rhinology to unite in a worthy memorial to Türck and Czermak on the fiftieth anniversary of their pioneer work in clinical laryngology and rhinology. It is proposed to have the jubilee celebration take the form of an international congress for these specialties, to be held at Vienna, April 21 to 25, 1908. The appeal is signed by the president of the society, Prof. O. Chiari, I. Bellariastrasse 12, Vienna, Austria, and the secretary, Prof. M. Grossman, IX, Garnisongasse 10. They request that each scientific society, especially those devoted to these specialties, will appoint some one of its members who will remain in constant correspondence with the president of the acting committee in reference to all matters concerning the congress. The invitation to laryngologists and rhinologists to take part in the congress is cordial and urgent. The favor of an early acceptance is requested.

From Russia.—Notwithstanding the strikes and uprisings in Russia, our medical exchanges have been regularly received, without any interruption to date, even in the receipt of the *Medizinskoe Obzryenie*, which is published in Moscow. They pursue the even tenor of their scientific way, apparently undisturbed, although they refer incidentally to the "prevailing unrest," and contain occasional obituary notices of medical men and women arrested or killed on account of their revolutionary activity or by the rioters. The privat docent for pathologic anatomy at Moscow, V. Worobieff, was shot by soldiers recently. They were searching his house, where he had established an emergency shelter and hospital for persons injured in the revolutionary movement. He was vice-president of the Moscow Therapeutic Association last year. The Russian Surgical Congress and the National Medical Congress were to have convened at Moscow early in 1906, but on account of the disturbances there both have been postponed *sine die*. The medical officials connected with the district hospitals are assumed by the inflamed populace to be partisans of the autocracy, and they have had to flee from the rioters. In many places the hospitals have been destroyed, and at Twer nine physicians were seriously injured. The Czar has recently conferred various decorations on a large number of physicians for courage and devotion during the campaign in Manchuria.

Consumption and Marriage.—The question as to whether or not consumptives should marry has been widely discussed in America of late years, at frequent intervals. In Great Britain the matter has not received much attention. It would seem now as if the subject possesses interest for the general public, for one of the principal lay journals of a recent date contains an article on consumption and marriage written by a well-known medical man. The writer points out that immunity or susceptibility to pulmonary tuberculosis are determined, to an exceptional degree, by the bodily health. That is why consumption is in general a disease of the lower classes in Great Britain, the fewer victims of the upper classes paying the penalty for the indifference of their class to the misery beneath them. In short, a person who comes into this world with a family history of consumption stands a better chance of being a healthy individual, provided that a sane and out-of-door life is led, than the person who has a clean bill of health, so far as ancestors are concerned, but who either from compulsion or choice, lowers the vitality of the system by breathing foul air and living amid general insanitary surroundings. As to marriage of individuals having a consumptive family history, the writer is like the late premier of England on political questions, somewhat noncommittal. He states that, professed advocate of eugenics though he be, the marriage of persons having a consumptive family history can not be altogether condemned. He declares in almost the same breath that "if some of us are to marry and some are not, I would rather in a general way, that those who have a bad family history remain in single blessedness." Perhaps, after all, this is the most sensible mode of regarding the matter, although, of course, it stands to reason that those who have acquired the disease would far better not marry.

Makes Artificial Albumin.—Our German exchanges announce that Emil Fischer has succeeded in the synthetic production of certain bodies resembling peptones. His communication was presented at a meeting of the German Chemical Society at Berlin, January 6, and the mere preliminary announcement of his address attracted a crown of eminent scientists from all over Europe. Fischer is professor of chemistry at Berlin and has an international reputation as the "master of synthetic chemistry." In his latest research he sought to produce the albumoses and peptones by reversing the process of their production, commencing by blending together certain amino acids, the resulting compounds possessing properties which correspond to those of the peptones. They present all the more important reactions of the peptones, and he calls them peptids. He can make them with 2, 3, 4, 5, 6 and 7 different amino acids, and has thus succeeded in producing 80 different kinds of peptids. He distinguishes them by the number of molecules, the same as the saccharids, calling them dipeptids, tetrapeptids and so on to polypeptids. The peptids are optically active like the natural proteins, and the more complicated the peptid the more closely it resembles natural derived albumin. The polypeptids give the biuret reaction, they are precipitated by phosphotungstic acid, and the trypsin of the pancreatic juice splits a number of the artificial peptids, with the same resulting products as in hydrolysis of the proteins. To complete the researches it was only necessary to succeed in producing a peptid from natural derived albumin, to fit the last link into the chain of the synthesis of albumin. This he has accomplished with silk fibrin, a comparatively simple derived albumin, which he was able to reduce to glyzyl-alanin, identical in every respect with the artificial peptid glyzyl-alanin.

The Danger of Ice.—Sir Shirley Murphy, medical officer of health to the London County Council, has recently called attention to the danger of allowing natural ice to come into contact with beverages and foodstuffs. He refers to the matter in part as follows: "As regards the conditions under which the ice industry is carried on, there are undoubtedly certain sources of risk of contamination incidental to the manipulation of ice in London, but the main question to be decided is the advisability of employing natural ice under circumstances in which it comes into actual contact with beverages and with food. Having in view the facilities which now exist for obtaining artificial ice, it appears not unreasonable to suggest that for all purposes in which there is actual contact with food, ice made from absolutely pure, and preferably from distilled water, should be used, inasmuch as the source

of natural ice can never be known with certainty by the consumer." Dr. Hamer, assistant medical officer to the council, points out that it is necessary to call attention to the need of supervision of cold stores. The New York legislature last year had under consideration a bill for the inspection of storage warehouses located in cities of the first class; to insure sanitary conditions in these stores, and to give the inspectors authority to condemn any foods stored therein which are considered as unfit for use or deleterious to health; also to provide a license fee of $500 per annum for such inspection. Dr. Hamer also called attention to the fact that the attempt has been made in Chicago to provide for the inspection of cold-storage plants and to limit the time of storage of perishable goods. In the salmon and fresh water fisheries bill, introduced into the British house of commons last year, it was proposed to make compulsory the registration of refrigerating premises in which salmon may be stored. Finally, it was pointed out that it will probably be found necessary in the near future to require registration of all cold-storage plants, as the possibilities of mischief in the case of a cold store are greater than they are in that of a dairy, yet the latter is subject to control by the health authorities, while the former is not.

Free Sanitarium Treatment of Non-tuberculous Affections Among the Working Classes of Germany.—Much has been written about the sanitarium treatment of the tuberculous policy holders in the insurance against sickness now compulsory in Germany, but little has been said in regard to courses of treatment given to non-tuberculous affections. It seems, however, that during the last seven years 67,795 men and 41,765 women have been given a free course of treatment on account of rheumatism, gout, heart and lung affections, anemia, urinary or venereal affections or inebriety. The average length of the course of treatment was about fifty days. The treatment of these affections is less expensive for the insurance companies (Krankenkassen) than that of tuberculosis, as the courses are shorter and forced feeding is not required, the total cost for each patient averaging about $50 for the former and $90 for the latter. The number of venereal cases admitted to treatment was 473 in 1904, 508 in 1903, 333 in 1902, and 142 in 1901. The insurance companies have not found it necessary to establish special institutions for the care of their non-tuberculous sick policy enschri holders, but distribute them as pay patients in existing hospitals, clinics, convalescent homes, etc. Out of each 100 thus treated, from 34 to 38 are still gaining their own livelihood after an interval of five years. The permanent results are thus from 4 to 7 per cent. more favorable than with the tuberculous beneficiaries. In a communication to the *Deutsche med. Wochft.* for January 4, Wagner analyzes and comments on the statistics recently published by the insurance societies. He remarks in conclusion that during the last seven years 88,000 tuberculous working people have been treated in special sanatoria, over 59,000 other sick persons in various hospitals, and over 36,000 others at the best watering places of Europe. In nearly every instance the course of treatment was a long one, causing considerable expense. Under other conditions these prolonged courses of treatment are possible only for the well-to-do. The classes of society which hitherto have had to do without calling in a physician to attend them in case of illness are now treated by eminent specialists and receive prolonged care in a suitable medical institution. The results on the whole are very encouraging, but at first not quite so favorable in the non-tuberculous as in the tuberculous cases, although the later outcome is better.

Sanitary Measures in French African Possessions.—Smallpox is very prevalent in the Senegal country, southwest of the Sahara desert, and efforts have been made to introduce vaccination without success. The lack of calves for obtaining the vaccine and the fact that vaccine material brought from Europe spoils on the long trip, render it impossible to apply the usual methods of vaccination. Arm-to-arm vaccination was tried but proved expensive, and is liable to be dangerous, as syphilis and leprosy are so frequently encountered. Consequently this method had to be abandoned. Promising experiments are now under way in which rabbits and gazelles are used for the vaccine producers. An epidemic of yellow fever decimated the population of Senegal in 1900, but within the last year or so an effectual system of "mosquito brigades" has been established among the natives, which have done remarkably fine work. Armed with shovels and pickaxes, cement and kerosene, they visit every nook and corner of the towns, villages and stations. An account in the *Semaine Méd.* for January 10 states that the natives have taken hold of this work with zest and have co-operated in promptly isolating the occasional cases of yellow fever encountered, so that no contagion has resulted in any instance from the imported disease. Similar prophylactic measures have been undertaken against malaria, screening of houses, etc., and the reduction in the number of cases among the employés of the railroads and the soldiers has been strikingly apparent. At some places the results were nullified by tacking the netting to the window blinds. This prevented the opening of the blinds for ventilation so that the men preferred to sleep on the verandas. Numerous regulations in regard to hygiene have been enforced and boards of public health appointed in various communities. The authorities pay about $2,400 a year to certain civilian physicians who reside in populous native centers to instruct the natives in hygiene and give them medical attendance. They are engaged for five years with six months leave of absence twice after two years of service. Circulars and pamphlets giving the prophylactic measures against various diseases of man and animals have been distributed freely, and the *Journal Officiel*, published by the governor general of French Western Africa, devotes much space to suggestions in regard to the care of the health in general, and under the local conditions.

LONDON LETTER.

Fracture Dislocation of the Shoulder; Action Against a Doctor for Malpractice.

At the Glamorganshire assizes a mining engineer brought an action for negligence against Dr. Skyrme and Mr. Lynn Thomas (the leading surgeon in South Wales), in which occurred a most regrettable conflict in the evidence of eminent surgeons. The plaintiff was knocked off a bicycle, receiving a violent blow over the right shoulder, with lacerations of the face, wrist, hand, knee and ankle on the right side. Half an hour later he was seen by Dr. Skyrme, who discovered a dislocation downward of the head of the humerus, with swelling of the shoulder. By pulling on the limb with his foot in the axilla he was able to reduce the dislocation, but finding crepitus and effusion in the axilla, he anticipated serious complication and expressed a wish for a second opinion. Mr. Lynn Thomas saw the case and confirmed Dr. Skyrme's serious prognosis. There was one-half inch shortening, showing that the fragments were overriding; the pulse was small compared with the opposite side, and the veins of the forearm were engorged. It was thought advisable to submit the limb to the manipulations necessary to bring the fragments into end-to-end apposition. As it was thought dangerous to apply the usual methods for retaining the fragments in position, lateral apposition was obtained by bringing the elbow to the side and fixing it there. The usual large pad in the axilla was omitted, only a small pad being used. During the following night the plaintiff removed the small pad from the axilla. Some days later Dr. Skyrme found him lying in bed with an ambulance book in front of him and a set of bandages, which, with the assistance of the nurse, he was endeavoring to arrange. Subsequently a skiagraph was taken and shown and explained to the patient. His case was largely based on this and other skiagraphs taken subsequently. They showed displacement inward of the upper end of the lower fragment, in which position union took place. The plaintiff stated that the arm was crippled, though he admitted that he could use the hand. In order to obtain evidence in support of his case he visited various medical men, but met with difficulties in inducing them to give evidence. At the action, Mr. A. J. Pepper, Mr. W. Rose and Mr. W. H. Battle gave evidence on his behalf. Mr. Pepper did not accept the evidence given by Dr. Skyrme and Mr. Lynn Thomas as to the nature of the injury. His opinion was that there had been no dislocation and no such interference with the circulation as to threaten gangrene. He thought that the deformity ought to have been reduced at the time of the accident and that failing, that the open operation should have been advised when the skiagraph showed the extent of the displacement. Mr. Rose and Mr. Battle agreed with this evidence and expressed the opinion that the treatment was improper. Mr. Lynn Thomas stated that he informed the patient that the result of a skiagraph could not affect the treatment, emphasized the need of keeping a strict lookout for further embarrassment of the circulation, and dismissed the idea of open operation. For the defendants, Sir Thomas Smith stated that the only proper judges as to what should have been done on the day of the accident were the physicians in attendance, and that he did not think that operation at a later stage, with a view to replacing the fragments, would have improved matters, his experience being that such an operation usually left the patient worse. When asked whether the *x*-rays had modified treatment he said, "They have largely increased actions at law." Mr. Mansell Moullin

and Mr. Robert Jones also gave evidence on the same side, the former stating that an attempt to bring the fragments into apposition on the day of the accident would have been dangerous, considering the injury to the vessels, nor would he have favored operation at a later stage. The jury disagreed and was discharged.

Sanitation in West Africa and in India.

Lieut.-Col. Giles has published a valuable report on an expedition sent by the Liverpool School of Tropical Medicine to investigate general sanitation and antimalarial measures in Sekondi, the West African gold fields, and Kumassi. He also makes a comparison between the conditions of European residence in the Gold Coast and those existing in India. At Sekondi, the point of commencement of the railway which now extends to Kumassi and which is intended to open up the Hinterland, a rapid growth of population, both European and native, is practically certain. The report dwells on the importance of maintaining a complete separation between European and native dwellings, even when the latter are occupied by native clerks, who are "people of education and quite inoffensive neighbors from a social point of view," the fact remaining that they and their families are as dangerous sources of the malarial parasite as their less cultivated countrymen. The daily association with natives for business purposes appears to be unobjectionable, but their blood is liable to supply the malarial parasite to mosquitoes, who may then convey it to Europeans sleeping in the vicinity. In addition to the separation of residential quarters it is declared necessary to fill up two lagoons which intersect the town and furnish extensive breeding places for mosquitoes. The railway to Kumassi calls for observation only on the score that its rolling stock is ill-adapted to the requirements of tropical traveling. Kumassi itself is infected by mosquitoes and also by a fly analogous to the tsetse and like it a carrier of trypanosome fatal to horses, and its site is declared to be so unfavorable to antimalarial operations that the best solution of the difficulty would be to remove the seat of the district government to some more favorable position. Failing this, it is probable that a great improvement of the existing conditions might be brought about by a thorough draining of the surrounding marsh. A favorable report is given, not only of the possibilities of antimalarial sanitation in the mining districts, but also of what has been accomplished. Stress is laid on the economy attendant on these measures. The financial success of a mining company depends far more on them than is usually recognized. The cost of paying and nursing sick men and the heavy expenses involved in invaliding and replacing them are a heavy drag on the industry which might be lessened by steady attention to sanitation, which would yield handsome interest on the money expended. As a general result of a comparison between the salubrity of West Africa and that of India, Colonel Giles concludes that there is not much difference between the two climates and that the main reason for the better health of the Anglo-Indian is that he has made himself more comfortable in his surroundings and that the unsanitary habits of Indian natives has led to the European living quite apart from the native and with consequent lessened liability to the contraction of native diseases.

Sanitary Measures in India in 1903-4.

The annual blue-book just issued on this subject contains much valuable information. The general health was less satisfactory than in 1902, chiefly owing to epidemics of cholera and plague. The mean death rate for India was 34.7 per 1,000 as against 31.5 in 1902. The mortality in the Bombay presidency was 43.9, the highest on record, with the exception of the terrible famine year of 1900. Plague alone claimed 92,000 victims in Belgian and Dharwar, thus raising the mortality of these districts to 70. The mortality of the chief diseases was as follows: Fevers, 19.6; plague, 3.03; cholera, 1.37; dysentery and diarrhea, 1.21; smallpox, 0.41. In the European and native armies, on the other hand, the mortality was abnormally low, one of the main reasons for which was their comparative immunity from plague. As usual, the chief causes of sickness among British troops were malarial and venereal disease, which accounted for 23.9 and 23.5 per cent., respectively, of all admissions to hospitals; but these diseases were not very fatal and the chief cause of mortality was typhoid fever which was responsible for 32 per cent. of deaths from all causes in the European army, while hepatic abscess was the cause of 10 per cent. British rule has conferred no greater boon than the hospitals and dispensaries, of which there were 2,500 in 1903. No fewer than 372,857 in-door and 22,399,350 out-door patients were treated. The number of operations constantly increases, especially those for cataract. Out of 854,000 operations only about 2,000 proved fatal.

Extraordinary Attempt to Obtain Compensation by Self-Inflicted Mutilation.

An extraordinary attempt to obtain compensation by self-inflicted mutilation has been the subject of an action in the courts. At the first trial, the jury disagreed, but at the second they found a verdict against the plaintiff. According to his story, he was traveling alone in a compartment on the Taff Vale Railway (in Wales). He stood up soon after leaving the station in order to place his umbrella on the rack opposite, and in doing so was caused to reel against the door by a sudden jerk of the train. The door was open, owing to the negligence of the company's servants, and he fell out, with the result that he lay with his feet across the other line of rails, insensible, and a train passed over his legs, so crushing them as to necessitate double amputation. This tale not only lacked corroboration, except in the matter of injuries, but was contradicted by evidence for the company. The company's servants swore that, when the train left the station, there was no traveler in the compartment which he described, and no door was found open at the next station. The locomotive superintendent found by experiment that no jerk took place when the train passed the place of the alleged fall. On the other hand, it was possible for the man to have got there by walking along the line in the dark, and he could have bought the railway ticket found on him before starting. In addition to the motive to obtain compensation from the railway company, he had in his possession no fewer than three coupon-bearing newspapers which insure their purchasers against railway accidents. Another fact which told against him with the jury was that, before the alleged accident, he spoke to his acquaintances of a dream which foretold the loss of two legs below the knee. But the medical evidence told still more strongly against him. His injuries were confined to the crushing of both legs in a straight line, and it was difficult to explain how he could have fallen and remained in the attitude necessary for this to occur, or how the accident rendered him unconscious and left no physical traces, not even bruises. Moreover, after the train passed over his legs, he showed no sign of the dazed condition usually associated with a severe fall and insensibility. He summoned a miner who was passing and gave him detailed directions for the improvisation of tourniquets for both thighs, and the physician who was called was struck with his coolness. On being moved into a van, he put out his hands to guide the passage of the shutter on which he lay. When told his legs must be amputated, he replied: "Yes, I will have my two legs off below the knee." The jury rejected his claim. This case is one of the most remarkable instances on record of the extent to which a man will inflict injury on himself for the purpose of obtaining compensation.

The Battle of the Nurses.

A serious difficulty has arisen among the nurses. In Great Britain there are no fewer than 80,000 nurses. Many thousands of these have spent much time and money in reaching a high standard of efficiency; but in engaging a nurse the public have no guarantee that she knows her business. Any girl can put on a cap and apron and call herself a trained nurse. The term "certified nurse" counts for something with the public, but it guarantees very little. There is no control over the hospitals in the issue of certificates. In some hospitals a girl can obtain a certificate after only six months of the most elementary work. In others she has to serve four years and to pass a difficult examination. A demand is now being made by these highly trained nurses for registration by the state and an established standard by which efficiency may be recognized. The agitation for registration began in 1887 with the foundation of the Royal British Nurses' Association by Mrs. Bedford Fenwick, who was for many years a nurse and matron in a large hospital. Subsequently a split occurred on the question of registration. A part of the association, headed by Mrs. Fenwick, seceded and formed the "Society for the State Registration of Nurses," which is now in a flourishing condition. Both societies drafted parliamentary bills which were duly blocked, but in 1904 a select committee of the house of commons considered the question and recommended the registration of nurses by a board to consist of twenty-one members. A battle is now being waged between the two societies. The older society asks that the nurses should be represented on the board in the proportion of one to five physicians, while the younger society claims that there should be a preponderance of physicians.

Pharmacology

No Longer Members of the Proprietary Association.

The Lambert Pharmacal Company, St. Louis, ask us to announce that they have withdrawn from membership in the Proprietary Association of America.

Formula of Ayer's Cherry Pectoral.

Dr. Frank L. Smith, Stafford Springs, Conn., writes as follows: "In a recent number of THE JOURNAL you printed a copy of the formula of 'Ayer's Cherry Pectoral.' In the issue of January 6, Dr. Henry Leffman of Philadelphia also presents one in which he notes the fact, which struck me most forcibly, that the above nostrum was sold years, probably thirty or forty, before the introduction of terpin hydrate or heroin. Something like a year ago I saw in a medical journal an offer of the Ayer people to send samples and formula of their pectoral to any physician requesting it. Out of curiosity I wrote asking for it, and here is an exact copy of the formula sent me:

R.	Morphiæ acet.	grs. lss	097
	Sanguinaria tr.	3ii	7 39
	Antimonii vin.		
	Ipecac vin., ää	3iii	11 09
	Pran virg. syr.	3iii	88 72

"Can you inform me which is the correct one, and when the change, if any, was made?"

Endorsement of the Fight Against Nostrums.

At a recent meeting of the Central Oklahoma Medical Society resolutions were adopted commending the work of *Collier's Weekly* and the *Ladies' Home Journal* in exposing "patent medicine" frauds.

Similar resolutions were passed by the Oklahoma County (Okla.) Medical Society and by the Venango County (Pa.) Medical Society. The latter society, in addition, commended the action of the *Evening News*, of Franklin, Pa., in refusing to accept contracts from "patent medicine" firms.

At the last meeting of the Muskogee (I. T.) Medical Society the following motion was unanimously carried:

> The Muskogee Medical Society tenders its sincere thanks and appreciation to THE JOURNAL of the American Medical Association for the timely crusade against the nostrums and so-called proprietary medicines and for its stand for an ethical profession.

At a meeting held January 8 the Hennepin County (Minn.) Medical Society passed resolutions approving the action of the American Medical Association in establishing a Council on Pharmacy and Chemistry and expressing its belief that the work of the council will result in great good, both to the public and to the physician. The society also resolved to support THE JOURNAL of the American Medical Association in its campaign of education in regard to nostrums and medical preparations.

Peruna's Shrewd Advertising.

It is often said that "it is an ill wind that blows no one any good." The successful promoter, whether he be exploiting stocks, the latest book or patent medicine, takes advantage of everything that comes his way to push the sale of his product. Strange as it may seem, the nostrum promoters are taking advantage of the campaign against patent medicines to further the sale of their products. The *New Idea* calls attention to the following advertisement:

> "There are people who object to the use of any proprietary medicine on the suspicion that spirits may have been used in its manufacture.
>
> "Even Peruna has not altogether escaped such criticism. But people who have taken Peruna, who have known of the benefits of Peruna by actual experience, know how utterly unfounded such notions are concerning Peruna. When the treasurer of the National Prohibition Voters' League comes out in a public statement to the effect that words fail to express his praise for Peruna and for the manufacturers of Peruna, it must appear to every candid mind how utterly irrational it is to suppose that any objection could be raised against Peruna from the standpoint of temperance.
>
> "Peruna has among its friends many of the leading temperance workers in this country who give it unstinted praise and do not hesitate to endorse it by the use of the most extravagant language."

The *New Idea* remarks that, since Peruna contains 28 per cent. of alcohol, "this advertisement is distinctly funny in its studied attempt to appeal to temperance people without flatly denying the presence of alcohol. . . . There is undoubtedly much truth in that advertisement. For instance, the first paragraph is true; so also the first sentence of the second paragraph. And we doubt not that every word of the last paragraph could be proved in court: many a temperance worker doubtless finds Peruna very convenient, and after he has had several liberalized doses he would be likely to feel like indorsing it 'by the use of the most extravagant language.' The word 'extravagant' is perhaps used advisedly by the Peruna people; it means, according to the Standard, 'exceeding just or ordinary limits, reason, truth or probability; immoderate; visionary.' Thus it would indicate their own opinion that these temperance workers' praise of Peruna 'exceeds reason, truth and probability.' The enthusiasm of the treasurer of the N. P. V. L. seems directly traceable to the use of Peruna q. s. and is not particularly difficult to account for. We ourselves have seen men in such a condition that 'they could not think of words to express their praise' of something that they had lately been drinking.

"For some reason the Acting Commissioner of Indian Affairs of the U. S. Government does not seem to know that 'it is irrational to suppose that any objection could be raised against Peruna from the standpoint of temperance,' for the horrid thing actually said in his official circular to Indian Agents (August 10): 'The sale of Peruna is hereby prohibited. As a medicine something else can be substituted; as an intoxicant it has been found too tempting and effective.' Commissioner Larrabee seems not to 'know of the benefits of Peruna by actual experience,' strongly emphasizing 'benefits.'

"Peruna advertising, in some instances, appears to say more between the lines than on them."

Advertising "Ethical" Proprietaries to the Public.

A Philadelphia correspondent sends us a copy of *The Evening Bulletin* of that city, which contains two specimen advertisements of cut-rate druggists that are suggestive, if not startling. Under the display heading, "Patent Medicines at Cut Rates," in the first of these advertisements, we find 19 proprietary remedies. Of these no less than 12 are advertised in medical journals, are freely prescribed by physicians and are generally claimed to be strictly for physician's use. The second advertisement, while not specifically headed, is more comprehensive, and contains less than 102 titles, of which 13 are soaps or toilet preparations, leaving 89 more specifically medicinal preparations. Forty-two of the latter, or not far from one-half, are so-called "ethical" proprietaries that are widely used by a certain class of physicians. Several of the preparations are dangerous if used indiscriminately, or by those who do not know their action. That this form of advertising constitutes an abuse that can be regulated and controlled by the manufacturer of the preparation is evident. In this connection it may be well to point out to manufacturers who are supplying physicians with "ethical" proprietaries that manufacturers of "patent medicines" have found it practicable to market their wares through regularly appointed retail agents, who are bound by a penalty contract to limit their sales of the several preparations to serially numbered packages, at a specific price. If manufacturers of "patent medicines" can enforce contracts of this kind it would seem that manufacturers of preparations designed for the sole use of physicians could, if they chose, control the sale of their preparations so that they would not be advertised to the public, for whom many of them would be decidedly dangerous.

"Patent Medicines" at the Antipodes.

At the Australasian Medical Congress, held in Adelaide last September, Mr. G. A. Syme, in his address on "State Medicine and Medical Ethics," recalled the circumstances under which the New Zealand parliament passed an act authorizing the framing of regulations making it compulsory that all patent medicines should have the formulæ printed on the label, and that if any poison were contained in the preparations the bottle must be labeled accordingly. The manufacturers of these preparations and their agents raised such a protest and brought such influence to bear that the regulations were modi-

fied to the extent that the formula instead of being placed on the bottle was to be lodged with the health department. The manufacturers still objected, and as no further alterations could be obtained they decided not to send their preparations to New Zealand. Mr. Syme stated that evidently the vendors of patent medicines clearly realized that once the real nature and commercial value of their preparations became publicly known, there could be no demand for them at their present extravagant prices. In commenting on this the *British Medical Journal* says: "Happy country! which has got rid of this pestilential traffic; but we wonder what our halfpenny press would say if any legislator were bold enough to venture to propose a bill which would deprive them of a large part of their receipts. Some day the public may wake up to the desirability of taking action to check the sale of preparations which are either poisonous or fraudulent, as those which are neither would have nothing to fear from such a law." Evidently the press in Great Britain and her colonies is as much under the dominion of the "patent medicine" man as it is in the United States.

Correspondence

Dr. McCormack's Successful Work.

NASHVILLE, TENN., Feb. 5, 1906.

To the Editor:—I had already learned much of what Dr. J. N. McCormack, as medical organizer of the American Medical Association, has been doing in other states, but was not fully impressed with the importance of his work until I heard him at Gallatin one week ago. This was his first lecture in middle Tennessee, and I was so anxious to learn something of the nature of his work that I visited Gallatin for the purpose of hearing him. He spoke in the courthouse at 2 p. m. to an audience composed of medical men, ministers, lawyers, county officials, business men, teachers and women. Every one present listened intently throughout his talk, which was entertaining, interesting and instructive. I am sure that the members of the county society were made more determined to perform their duties to each other and to the public better than they had ever done before. I am sure that the laity present went home impressed with the fact that physicians are remiss in their duty if they hold themselves aloof from their professional fellows. I was greatly impressed with the importance of having the general public hear Dr. McCormack, for the reason that there are some physicians who need to be driven to the performance of their duties, medically speaking, by public opinion.

If Dr. McCormack were doing nothing else than striking boldly at the patent medicine evil, this alone would justify his being sent out by the American Medical Association. So pleased was I with the lecture, I am now arranging an itinerary for him in middle and east Tennessee which will keep him busy for several weeks. I only wish it were possible for him to visit every county in our state and every county in every other state. I do not believe there is another man in the United States who is as capable as he in the work he is doing.

G. C. SAVAGE.

Poisoning by Kopp's Baby Friend.

OMAHA, Jan. 23, 1906.

To the Editor:—Since reporting to you the case of opium poisoning from the use of "Kopp's Baby Friend" I have seen another child suffering in the same way from the same cause. The medicine in this case had been sent through the mails from the Kopps at York, Pa.; the bottle bore the additional inducement for use that it was "the king of baby soothers." It seems to be the practice of those people to watch the birth notices published in the newspapers and to furnish free samples of their mixture to the baby's mother, and then our druggist will do the rest. The Antikamnia Chemical Company is using the mails in the same way to bring its goods before the people. I send you herewith a package from that company to one of my patients. It tells the tale. I hope that the proper authorities will put a stop to this infamous use of the United States mail.

ROBERT E. ESKILDSON, M.D.

Association News

NEW MEMBERS.

List of new members of the American Medical Association for the month of January, 1906:

ALABAMA.

Black, J. B., Blowhorn.
Cocke, P. L., Birmingham.
Howard, P. J., Mobile.
Lee, J. D., Lynn.
Madler, N. A., Mobile.

ARIZONA.

Broderick, D. E., Bisbee.
Brown, I. E., Troy.
Godfrey, E. S. Jr., Lowell.
Raymond, R. O., Williams.

ARKANSAS.

Beck, E. L., Texarkana.
Bentley, C. E., Little Rock.
Black, E. M., Yaney.
Blackwell, U. S., Esau.
Brown, W. A., Monticello.
Cannon, J. S., West Fork.
Cotham, E. R., Monticello.
Crocker, J. T., Lonelm.
Dickson, H. N., Paragould.
Gallaher, W. M., Foreman.
Gillespie, L. J., Hope.
Harrod, G. W. L., Coal Hill.
Hopkins, G. T., Paragould.
Jones, E. T., Hampton.
Jones, O. E., Newport.
Kinsworthy, J. H., Little Rock.
Lamb, Ellis, Lorado.
Martin, S. P., Blytheville.
Martindale, G. H., Hope.
Owen, H. M., Newport.
Powell, J. T., Maysville, Ark.
Poynor, I. M., Berryville.
Prickett, Charles, Tarry.
Robinson, P. A., Barfield.
Routh, H. P., Hackett.
Saner, W. F., Little Rock.
Stanley, D. T., Little Rock.
Stewart, S. S., Little Rock.
Strond, H. A., Jonesboro.
Townsend, N. R., Arkadelphia.
Turner, W. S., Blakemore.
Weaver, S. J., Saratoga.
West, Crawford, Newport.
West, R. M., Clarendon.
Williams, E. K., Arkadelphia.
Williams, J. M., Malvern.

CALIFORNIA.

Bleeker, J. J., Pasadena.
Brunn, Harold, San Francisco.
Burke, W. P., Highland.
Christiansen, H. B., Salinas.
Dietsch, C. O., Los Angeles.
Dodel, Xavier, San Francisco.
Dunsmoor, N. C., Los Angeles.
Emerson, H. K., Los Angeles.
Gray, A. J., San Diego.
Green, Nat., Watsonville.
Hearne, J. C., San Diego.
King, J. C., Banning.
Koford, Henning, Oakland.
MacDonald, E. A., Redlands.
McCuban, Coline, Pasadena.
Manle, Alva F., Redwood City.
Petter, R. S., Los Angeles.
Scholl, A. J., Los Angeles.
Siebe, Elizabeth B., San Francisco.
Wagner, E. R., San José.
Worthington, G. B., McCloud.
Yost, F. O., Los Angeles.

COLORADO.

Childs, S. B., Denver.
Collins, Harriette M., Montrose.
Elder, E. A., Pueblo.
Hopkins, J. R., Denver.
Kennedy, A. L., Denver.
MacLean, A. M., Leadville.
McCartney, O. P., Delta.
Provendorf, Otis, Canon City.
Orr, C. L., Alamosa.
Ringle, C. A., Greeley.
Taylor, R. L., Denver.

CONNECTICUT.

Blanchard, I. D., Hartford.
Brownlee, H. F., Danbury.
Burnham, J. L., Lyme.
Clarke, J. A., Greenwich.
Cloonan, J. J., Stamford.
Coates, F. A., Mystic.
Conklin, J. H., Hartford.
De Forest, L. S., New Haven.
De Wolfe, D. C., Bridgeport.
Engelke, Charles, Waterbury.
Fromen, E. T., New Britain.
Frost, C. W. S., Waterbury.
Gillam, W. S., South Manchester.
Hamant, I. L., Norfolk.
Lay, W. S., Hamden.
Loveland, J. E., Middletown.
May, G. W., Willimantic.
Morasse, L. O., Putnam.
Parker, T. R., Willimantic.
Skiff, F. S., Falls Village.
Storrs, E. R., Hartford.
Weldon, John, Willimantic.
Wooster, C. M., Tariffville.

DELAWARE.

Crossmore, J. L., Wyoming.
Wales, J. P., Wilmington.

DISTRICT OF COLUMBIA.

Barry, Edmund, Washington.
Beale, R. S., Washington.
Crosson, H. J., Washington.
Douglas, J. F., Washington.
Erving, W. G., Washington.
Fillebrown, J. P., Washington.
Glazebrook, L. W., Washington.
Hammett, C. M., Washington.
Hardin, B. L., Washington.
Lehr, L. C., Washington.
McKaig, J. F., Washington.
Magruder, E. P., Washington.
Mallan, T. F., Washington.
Mason, R. F., Washington.
Nevitt, J. R., Washington.
Randolph, B. M., Washington.
Thomas, J. T., Washington.
Tucker, W. P., Washington.

GEORGIA.

Crook, Martin, Columbus.
Hull, Marion McH., Atlanta.
Maner, G. R., Warrentown.
Mathews, J. C., Griffin.
Mulherin, W. A., Augusta.
Patrick, J. Z., Statesboro.
Spence, I. N. B., Social Circle.

ILLINOIS.

Allen, S. A., Chicago.
Anderson, F. M., Decatur.
Barnes, S. D., Chicago.
Barnsback, R. S., Edwardsville.
Bennett, Cleaves, Mattoon.
Dewitz, O. J., Chicago.
Eddy, W. L., Milan.
English, J. N., Gillespie.
Etherton, M., Carbondale.
Fox, Ralph, Bloomington.
Franke, W. E. Newton.
Galley, J. S., Ashland.
Galbraith, G. H., Clifford.
Gilmore, W. S., Chicago.
Gray, A. W., Chicago.
Grizzell, C. C., De Soto.
Haines, W. E., Bushnell.
Hamil, Charles, Greenview.
Hanly, H. H., Havana.
Harding, P. D., Evanston.
Hill, W. C., Murphysboro.
Holmes, J. M., Monticello.
Irwin, W. L., Plymouth.
Johnson, C. N., Chicago.
Jones, Leroy, Hoopeston.
Jones, S. W., Danville.
Kalacinski, Felix, Chicago.
Kaull, W. M., Princeton.
Kershner, J. S., Dieterich.
Landis, B. F., Tiskilwa.
Littlejohn, C., Farmer City.
McDonald, J. H., Chicago.
Mefford, W. T., Chicago.
Moore, A. N., Mattoon.
Morgan, T. W., Virden.
Morris, E. V. D., Galesburg.
Orth, D. A., Chicago.
Paris, W. J. J., Cave-in-Rock.
Paul, W. H., Danville.
Pickard, J. C., Chicago.
Randall, C. E., Decatur.
Roberts, H. H., Maywood.
Sheets, V. L., Chicago.
Stewart, A. F., Oneida.
Sedgwick, H. M., Peoria.
St. Clair, W. H., Effingham.
Stewart, H. J. Kewanee.
Taylor, Buford, Westville.
Thilo, George, Chicago.
Thorpe, S. L., Decatur.
Wilhelmy, A. E., Decatur.
Wilkinson, C. H., Chicago.
Williamson, Marion F., Joliet.
Winbigler, B. R., Seaton.
Welker, J. W., Mattoon.
Walsh, W. E., Morris.

INDIANA.

Bland, H. E., Fairbanks.
Brannock, B. B., Jasper.

Bruggeman, H. O., Fort Wayne.
Burley, D. M., Vincennes.
Casebeer, I. M., Newport.
Coleman, W. S., Rushville.
Dickey, A. S., Tipton.
Gerrish, W. D., Clinton.
Gilium, W. H., Rockville.
Grayston, F. W., Huntington.
Green, T. G., Shelbyville.
Hoopingarner, G. B., Elkhart.
Hunter, J. R., Huntington.
Holtzendorff, C. F., Plymouth.
Haggerty, R. Q., Elkhart.
Hamilton, N. C., Kokomo.
Hovice, S. H., Fort Wayne.
Hurst, E. M., Cloverdale.
Kahn, D. L., Indianapolis.
Laval, William, Evansville.
Morris, C. C., Rockville.
McKee, W. E., Tipton.
Miller, D. L., Goshen.
Miller, J. M., Decatur.
Nieschang, C. C. F., Fort Wayne.
Ritter, T. R., Orleans.
Rannells, J. N., Rochester.
Sanders, J. M., Princeton.
Snapp, A. A., Goshen.
Shanklin, Leslie, Sullivan.
Strickler, S. L., Boggstown.
Scott, N. W., Huntington.
Thomas, P. B., Decatur.
Van Sweringen, Garrette, Fort Wayne.
Van Osdol, D. D., Rushville.
Wall, C. T., Washington.
Winstandley, W. C., New Albany
Wilcox, F. H., New Albany.
Wolfe, Z. C., Corydon.

INDIAN TERRITORY.

Reber, G. A., Fentress.
Savage, C. C., Hartshorne.

IOWA.

Auner, J. F., Waverly.
Fuller, G. H., Delhi.
Hoxie, W. E., Hampton.
Laurence, C. S., Tabor.
Manion, P. H., Charlotte.
McCaulliff, G. T., Webster.
Pittman, C. W., Salem.
Powel, Preston, Adair.
Whitmire, W. L., Sumner.

KANSAS.

Brickell, J. B., Americus.
Barber, C. E., Palco.
Butcher, D. F., Severy.
Bauer, W. H., Sylvia.
Bogle, H. H., Pittsburg.
Cunningham, M. E., Garnett.
Cobean, H. L., Wellington.
Cheney, J. W., Kingman.
Connor, J. A., Burlingame.
Decker, J. C., Belleville.
Ebnother, C. L., Downs.
Emory, E. B., Winfield.
Faust, J. W., Kansas City.
Hymer, E. S., Wichita.
Holeman, J. T., Garland.
Hart, M. M., Macksville.
Houck, J. H., Agenda.
Henderson, A. G., Leonardville.
Koentz, C. H., Onaga.
Kline, J. S., Eldorado.
Leigh, E. J., Hiawatha.
Moore, D. B., Osage City.
Mills, H. L., Penalosa.
Martin, F. H., Iola.
Manser, W. H., Burden.
Markham, R. M., Scammon.
McIntosh, E. S., Burns.
Partridge, J. M., Emporia.
Page, J. H., Emporia.
Preston, J. C., Buffalo.
Pelmer, S. M., Florence.
Redmond, G. C., Potter.
Smith, A. D., Wamego.
Summers, Laurel A., Wheaton.
Stevens, T. A., Caney.
Steelsmith, Simon, Abilene.
St. John, H. E., Alton.
Riddell, J. D., Enterprise.
Waite, G. R., Milan.
Winbigler, C. W., Harper.
Zimmerman, A. C., Perry.

KENTUCKY.

Atkinson, J. L., Campbellsville.
Beeler, G. F., Clinton.
Boyd, R. L., Pembroke.
Bullock, W. O., Lexington.
Bryant, J. F., Corbin.
Bannister, W. E., Lexington.
Berry, W. A., Ashland.
Crowley, W., Newport.
Cleaver, T. T., Lebanon.
Doyle, O. W., Louisville.
Davidson, H. A., Louisville.
Dilly, O. C., Louisville.
Ellison, C. G., Williamsburg.
Fleischaker, F. W., Louisville.
Gambill, W. L., Ashland.
Greenwell, J. I., New Haven.
Hunt, Charles, Clinton.
Henderson, A. T., Ashland.
Helmbold, A., Newport.
Lovell, A. G., Mount Vernon.
Lewis, T. S., Lexington.
Lapsley, F. L., Paris.
Mattingly, W. E., Lebanon.
Norris, C. W., Lexington.
Prather, Porter, Lexington.
South, J. G., Frankfort.
Straus, E. C., Louisville.
Thompson, C. E., Covington.
Tydings, C. O., Cupio.
Van Meter, B. F., Lexington.
Wade, J. H., Ashland.
Whayne, T. S., Columbus.
Walters, G. W., Covington.

LOUISIANA.

Bohne, P. W., New Orleans.
Wall, S. D., Slaughter.

MAINE.

Boyle, Blanche C., Portland.
Cleveland, H. H., Auburn.
Gerrish, F. H., Portland.
Hayes, D. W., Lewiston.
Hills, L. L., Westbrook.
Nevers, H. H., Bingham.
Peabody, F. B., Richmond.
Pratt, G. L., Farmington.
Phelps, Stuart E., West Sullivan.
Sanger, E. B., Bangor.

MARYLAND.

Huck, J. G., Baltimore.
Milbourne, L. B., Baltimore.
Purvis, J. O., Annapolis.
Plummer, Edward, Baltimore.
Routson, T. C., Buckeystown.
Reuling, George, Baltimore.
Ries, A. F., Baltimore.
Samuels, A., Baltimore.
Tannar, F. N., Baltimore.
Tarun, William, Baltimore.
Winternitz, L. C., Baltimore.
Watkins, D. A., Hagerstown.

MASSACHUSETTS.

Auger, L. L., Worcester.
Anthony, F. W., Haverhill.
Ayer, J. B., Boston.
Burley, B. T., Worcester.
Blakely, D. N., Boston.
Bellamy, W. W., Dorchester.
Blanchard, B. S., Brookline.
Butler, J. I., Springfield.
Berry, L. M., Chicopee Falls.
Buzzell, Daniel, Wilmington.
Beckett, F. H., Fall River, Mass.
Bryant, G. W., West Somerville.
Baker, G. L., Boston.
Brickett, Beatrice H., Newton Center.
Brown, O. J., North Adams.
Beal, H. W., Worcester.
Bushnell, Homer, North Adams.
Brace, G. W., Westfield.
Cummin, J. W., Boston.
Caulfield, T. E., Woburn.
Clark, E. J., Lowell.
Chase, H. M., Boston.
Cogan, J. A., Boston.
Crocker, J. M., Cambridge.
Coues, W. P., Boston.
Caisse, G. E., Lowell, Mass.
Clark, L. B., Waverly.
Darling, C. B., Roxbury.
Dewis, J. W., Boston.
De Lue, F. S., Boston.
Dudley, A. W., Cambridge.
Drew, F. P., East Dedham.
Denny, F. P., Brookline.
Elliot, H. L., Salem.
Ensworth, W. H., East Boston.
Edwards, W. L., Boston.
Emerson, Kendall, Worcester.
Emerson, E. B., Tewksbury.
Finkelstein, Harry, Boston.
Fair, R. P., Boston.
Fitzpatrick, J. J., Charlestown.
Fish, Lewis, Fitchburg.
Fleming, P. J., Cambridge.
Flynn, H. L., Dorchester.
Greenwood, A. M., Marblehead.
Gilbert, D. D., Boston.
Getchell, A. C., Worcester.
Garceau, Edgar, Boston.
Gage, T. H., Worcester.
Greene, J. S., Dorchester.
Hall, W. D., Boston.
Hunt, G. E., Holyoke.
Hurwitz, A. J., Boston.
Hache, H. C., Somerville.
Haviland, W. C., Worcester.
Hickey, J. J., Peabody.
Howe, H. N., Greenfield.
Hooker, C. P., Springfield.
Hamilton, Annie L., Boston.
Hurd, R. C., Newburyport.
Hodskins, M. B., Palmer.
Hayes, S. W., New Bedford.
Hooker, E. D., Arlington.
Harlow, G. A., Tyngsborough.
Holyoke, Frank, Holyoke
Jones, E. W., Lynn.
Jefferson, H. P., Boston.
Kite, W. C., Milton.
Kaan, G. W., Brookline.
Lyons, H. H., Fitchburg.
Lancaster, S., Cambridge.
Lang, H. B., Dorchester Center.
Langmaid, S. W., Boston.
Linenthal, Harry, Roxbury.
Lowd, H. M., Swampscott.
Lougee, W. W., Malden.
Lord, S. A., Ipswich.
McGillicuddy, R. A., Turner's Falls.
Mooring, S. W., Gloucester.
McSheehy, T. C., Worcester.
Makechnie, A. N., Cambridge.
Morse, H. L., Boston.
Moulton, C. F., Boston.
Morrison, W. A., Boston.
Medalia, L. S., Boston.
MacCoy, W. E., Brookline.
McLaughlin, J. I., Roxbury.
MacCormick, J. A., Boston.
Norton, G. E., Cambridge.
Noyes, E. H., Newburyport.
O'Connor, D. F., Worcester.
Perry, H. J., Boston.
Phelps, O. W., Warren.
Post, Abner, Boston.
Pastene, A. A., Dorchester.
Pond, B. W., Boston.
Pierce, M. V., Milton.
Plummer, E. M., Boston.
Potter, Frances W., South Framingham.
Ruston, W. D., Somerville.
Rogers, A. E., Boston.
Riley, Elizabeth A., Boston.
Robey, W. H. Jr., Boston.
Reynolds, H. V., Boston.
Ring, A. H., Arlington Heights.
Richmond, Simon, Roxbury.
Saville, S. C., Boston.
Sanborn, P. L., Marblehead.
Stockwell, E. W., Adams.
Smith, W. A., Springfield.
Scanlan, T. J., Boston.
Shannon, N. V., Cambridge.
Scannell, D. D., Boston.
Stevens, C. B., Worcester.
Swan, W. D., Cambridge.
Stevens, G. B., Boston.
Sleeper, F. W., Boston.
Simmons, F. A., Brockton.
Staples, C. H., Malden.
Stone, L. R., Newton.
Smith, F. H., Lowell.
Sise, L. F., Medford.
Smith, A. C., Brockton.
Tileston, Wilder, Boston.
Townsend, C. W., Boston.
Twombly, E. L., Boston.
Temple, W. F., Boston.
Tully, E. J., Fitchburg.
Whitney, E. W., Ware.
Wheeler, L. A., Worcester.
Williams, C., Boston.
Watts, H. F. R., Boston.
Washburn, F. A. Jr., Boston.
Worcester, Alfred, Waltham.
Watson, F. S., Boston.

MICHIGAN.

Ballard, L. Anna, Lansing.
Case, J. T., Battle Creek.
Deonier, D., Sioux City.
Graham, H. W., Mount Morris.
Knapp, M. S., Flint.
King, W. T., Allouez.
Larson, C. J., Negaunee.
Noble, C. I., Kalamazoo.
Roche, A. C., Kearsarge.
Sutton, M. P., Clayton.
Shumway, F. W., Lansing.
Wilson, H. R., Saginaw.
Young, John, Onaway.

MINNESOTA.

Awty, W. J., Moorhead.
Barrett, Frederick, Eyeleth.
Baker, A. C., Stephen.
Browning, W. E., Caledonia.
Condit, W. H., Minneapolis.
Catlin, J. J., Buffalo.
Forbes, H. J., Winnebago City.
Groves, A. F., Brainerd.
George, J. W., Aitkin.
Germain, R. T., Barnesville.
Hamilton, Worthington.
Johnson, Hans, Murdock.
Kern, M. J., Freeport.
Kittleson, T. N., Fergus Falls.
Lenont, C. B., Virginia.
Nelson, A., Fertile.
Parrott, B. W., Long Prairie.
McIntyre, G. W., St. Peter.
Sternberg, Oscar, North Branch.
Taylor, A. C., Duluth.
Van Valkenburg, B. F., Long Prairie.
Wilkinson, S. L., Duluth.
Whiting, J. F., Spencer Brook.

MISSISSIPPI.

Basham, J. W., Aberdeen.
Hagaman, R. L., Centerville.
Moore, T. A., Red Banks.
Sykes, R. L., Columbus.
Windham, J. H., Busby.

MISSOURI.

Atkins, H. S., St. Louis.
Adams, W. T., Richards.
Biggs, M. O., Bowling Green.
Baumgarten, Gustav, St. Louis.
Breed, M. E., St. Louis.
Boyd, J. R., Springfield.
Bond, Van H., Cotton Plant.
Bryan, W. M. C., St. Louis.
Beatty, J. D., Troy.
Cassity, G. H., Tulip.
Dunnavant, C. A. P., Kirkwood.
Dryden, U. C., Purdin.
Egbert, T. H., Kennett.
Eberlein, E. W., St. Louis.
Foster, F. W., East Lynne.
Goodier, R. H., Hannibal.
Harris, J. E., Marshall.
Henke, A. F., St. Louis.
Hancock, J. B., Newtonia.
Jeude, J. J., St. Louis.
Keithly, C. L., Nevada.
Koch, C. D., Marysville.
Murphy, H. C., Richland.
Miller, E. H., Liberty.
Murphy, J. C., St. Louis.
Moore, Chrysanthus, St. Louis.
Moss, F. M., Paris.
Merriman, C. S., Kansas City.
Menestrina, J. F., St. Louis.
North, E. P., St. Louis.
Porter, E. S., Milan.
Pierce, H. M., St. Louis.
Patterson, H. H., Edgerton.
Rumbold, E. M., St. Louis.
Roberts, C. F., Kansas City.
Reed, W. M., Kansas City.
Read, N. M., Clarence.
Sherman, D. C., Elwood.
Shrader, E. W., Moberly.
Shattinger, Charles, St. Louis.
Saner, W. E., St. Louis.
Stevens, W. W., Greenwood.
Towles, S. P., Jacksonville.
Townsend, J. P., Potosi.
Taussig, A. E., St. Louis, Mo.
Woody, C. E., Springfield.
Wolf, I. J., Kansas City.
Wallis, W. M., Marysville.

MONTANA.

Fligman, L. H., Helena.
Marquis, T. B., Clyser Park.
Rennick, P. S., Victor.
Townshend, H. H., Melrose.

NEBRASKA.

Bush, M. E., Sumner.
Birdsall, G. A., Alexandria.
Dearing, W. H., Lushton.
Dwyer, E. H., Gordon.
Hart, J. F., St. Paul.
Heath, G. A., Daykin.
Johnston, N. T., Upland.
Karr, G. M., Hay Springs.
Metz, P. H., Humphrey.
Martyn, B. T., Columbus.
Pilsbury, L. B., Lincoln.
Reed, Eleanor C., Peru.
Strausberry, D. C., Tobias.
Smith, E. J., Burwell.
Sumner, Ella P., Bloomington.
Waggener, J. A., Dawson.

NEVADA.

Hickok, G. R., Gardnerville.
Lewis, J. A., Reno.

NEW HAMPSHIRE.

Lougee, G. W., Freedon.
Pease, B. D., Greenville.
Richmond, A. P., Dover.
Tarbell, W. H., Bedford.
Wallace, A. S., Nashua.

NEW JERSEY.

Burnette, H. H., Hoboken.
Cook, H. F., Newark.
Flinn, F. A., Jersey City.
Jacquemin, T. J., Union Hill.
Jennings, W. B., Haddonfield.
Kersten, A. J., Jersey City.
Marcy, J. W., Merchantville.
Rector, Ray M., Moorestown.
Van Duyne, S. Elizabeth, Newark.

NEW MEXICO.

Harronn, W. S., Santa Fe.
Kluttz, W. C., Tucumcari.
Mac Lake, William, Silver City.

NEW YORK.

Brothers, A., New York City.
Boland, M., Brooklyn.
Fincke, C. L., Brooklyn.
Griswold, V. M., Fredonia.
Hochheimer, E., New York City.

Jacobus, A. M., New York City.
Leiser, O. M., New York City.
Meeker, H. D., New York City.
Northrup, W. P., New York City.
Paepke, J. G., New York City.
Smith, T. A., New York City.
Tynberg, S., New York City.
Thacher, J. S., New York City.
Woodruff, J. V., Buffalo.
Williams, C. M., New York City.

NORTH CAROLINA.

Ballard, A. M., Asheville.
Beall, W. P., Greensboro.
McGehee, J. W., Reidsville.

NORTH DAKOTA.

Barbour, H. W., Edgeley.
Bean, O. G., Wyndmere.
Bowen, J. W., Mouanzo.
Call, A. M., Rugby.
Currie, A. N., Hatton.
Cramond, J. E., Mohall.
Davies, J. S., Granville.
Devine, L. L., Lansford.
Fisher, Stephen, Dickinson.
Hillis, A. E., La Moure.
James, H. J., Bathgate.
Kennedy, W. J., Enderlin.
McGurren, C. J., Larimore.
Pence, R. W., Balfour.
Stephenson, R. B., Ellendale.
Spear, E. D., None.
Smith, Clinton, Devil's Lake.
Todd, G. D., Medina.
Verret, B. D., Rolla.

OHIO.

Baker, G. H., Cincinnati.
Blakely, G. W., Washington Courthouse.
Blackford, J. M., Martin's Ferry.
Clemmer, J. W., Columbus.
Coburn, C. C., Upper Sandusky.
Collins, J. W., Toronto.
Cofield, Robert, Cincinnati.
Coplan, M., Cleveland.
Davies, D. J., Cincinnati.
Dunham, J. H., Dayton.
Davis, W. C., Columbus.
Ellis, W. C., Bentonville.
Follansbee, G. E., Cleveland.
Frechtling, L. H., Hamilton.
Fleming, A. C., Marietta.
Farley, J. T., Lancaster.
Fihe, C. C., Cincinnati.
Gatch, C. W., Milford.
Good, P. W., Cincinnati.
Gordon, J. L., Columbus.
Hills, H. B., Youngstown.
Henzler, C. J., Toledo.
Hussey, A. E., Cincinnati.
Harris, James, Cincinnati.
Held, Dr. F., Cincinnati.
Hart, R. B., Marietta.
Huston, C. N., Hamilton.
Irvin, J. W., Creston.
Infield, T. H., Hartford.
Korell, F. A., Key.
Latimer, J. A., Cleveland.
Miesse, Charles, Chillicothe.
McKerrihan, S. B., Portsmouth.
Maloney, J. J., Cincinnati.
Metzenbaum, Myron, Cleveland.
Moore, W. R., Ironton.
Norris, K. A., Columbus.
Parke, B. R., Wellsville.
Root, R. R., Graneville.
Ramsey, Allan, Cincinnati.
Sheppard, D. O., Barnesville.
Shelton, H. P., Georgetown.
Searce, J. B., Chillicothe.
Smallwood, E. H., Chillicothe.
Scheel, J. O., Hamilton.
Sharpe, J. W., McClure.
Steele, W. C., New Berlin.
Trump, W., Hamilton.
Turner, C. E., Columbus.
Thompson, W. E., Bethel.
Vogel, F. C., Cincinnati.
Webb, W. G., Cameron.
Woodrow, O. M., Wellston.

OKLAHOMA TERRITORY.

Barrett, A. E., Hinton.
Owen, H. D., Keokuk Falls.
Wildrick, H. H., Norman.
Renfrow, T. L., Billings.

PENNSYLVANIA.

Bastian, C. B., Williamsport.
Beaumont, W. B., West Auburn.
Elphinston, J. W., Allegheny.
Feldstein, S. L., Philadelphia.
Fretz, H. G., Philadelphia.
Gibbens, W. H. H., Philadelphia.
Gordon, Alfred, Philadelphia.
Hayes, L. Z., Force.
Harris, C. M., Johnstown.
Humphrey, W. N., Sharonsburg.
Hunter, J. A., West Middlesex.
Henry, C. O., Altetown.
Kennedy, G. W., Sharon.
Kring, S. S., Johnstown.
Morrow, T. M., Altoona.
Meredith, H. B., Danville.
Roderer, J. F., Philadelphia.
St. Clair, Thomas, Latrobe.
Steward, W. J., Lancaster.
Skillern, P. G., Philadelphia.
Snyder, C. E., Greensburg.
Stewart, R. S., Washington.
Smith, H. R., Altoona.
Spencer, Elizabeth C., Norristown.
Thompson, R. A., Butler.
Tallant, Alice W., Philadelphia.
Tinker, G. M., Sharon.
Van Naten, B. K., Franklin.
Wertheimer, H. G., Pittsburg.
Woodruff, J. B., Johnstown.
Wallace, R. A., Newcastle.
Walker, W. E., McKeesport.

CANAL ZONE, PANAMA.

Caldwell, B. W., Bas Obispo.

RHODE ISLAND.

Donley, J. E., Providence.
Davenport, J. H., Providence.
Power, J. E., Providence.
Roech, W. S., Phenix.

SOUTH CAROLINA.

Burn, J. W., Charleston.
Harper, J. C., Greenwood.
Swygert, S. L., Greenwood.

SOUTH DAKOTA.

Beall, L. F., Irene.
Babcock, L. F., Deadwood.
Cook, J. F., Langford.
Kjerland, T. N., Webster.
Milburn, J. A., Wessington.

TENNESSEE.

Arnold, J. M., Lexington.
Bailey, William, Nashville.
Boyd, M. P., Farmville.
Brewer, J. D., Newbern.
Blanton, M. A., Baileyton.
Bazemore, G. M., Cleveland.
Blackwell, O. L., Whorley.
Connell, J. R., Adams.
Carter, S. M., Knoxville.
Compton, W. G., Westport.
Campbell, H. T., Nashville.
Cox, J. B., Huntingdon.
Davis, J. E., Sweetwater.
Dickson, B. V., Covington.
Edwards, T. D., Union City.
Finch, Carl, Dresden.
Fisher, J. B., Memphis.
Gist, D. R., Sparta.
Garrard, J. I., Knoxville.
Kelso, H. J., Knoxville.
Lones, C. E., Knoxville.
Lewis, P. K., Cove Station.
Miller, S. M., Knoxville.
Matlock, P. N., Kenton.
Pangle, H. G., Russellville.
Pearson, M. M., Bristol.
Potter, W. W., Ormo.
Richmond, W. D., Knoxville.
Roper, J. F., Union City.
Ray, R. L., Monterey.
Shannon, J. O., Franklin.
Sisk, J. A., Knoxville.
Smith, J. N., Cuba Landing.
Teachout, S. R., Huntingdon.
Woodson, L. M., Gallatin.
Watson, W. T., Byersburg.
Walker, T. J., Dyersburg.
Weesner, B. C., Whitesburg.

TEXAS.

Alexander, P. T., Humble.
Beakley, S. S., Seguin.
Bauguss, J. B., Heidenheimer.
Barnes, G. R., Trinity.
Coulter, H. F., Rockdale.
Corry, J. F., Rockwall.
Chandler, J. N., Weatherford.
Combs, H. B., Bastrop.
Dunn, R. McM., Palestine.
Friedman, A., San Antonio.
Gilmore, M. E., North Fort Worth.
Hayes, C. F., Climax.
Hill, B. W. D., Dawson.
Hedrick, J. A., Delhart.
Jackson, G. L., McMahan.
King, G. T., Elgin.
Karbach, F. R., Maxwell.
Leal, M. T., Laredo.
Lancaster, J. R., Granbury.
McClure, M. E., Alto.
Metz, M. S., McKinney.
Myers, W., Seguin.
Nave, S. F., Shiner.
Pierce, T. L., Carbon.
Stark, H. H., El Paso.
York, W. E., Giddings.

VERMONT.

Carsley, S. R., Vergennes.
Lane, W. H., Brattleboro.
Pierce, E. B., Bennington.

VIRGINIA.

Bagly, B. B., Walkerton.
Browning, J. H., Charlottesville.
Cornett, B. F., Pennington Gap.
Coumbe, A. G., Vienna.
Emerson, G. O., Bachelors' Hall.
Fadeley, G. B., Falls Church.
Henkel, H. H., Staunton.
Kent, S. T. A., Ingram.
Moore, W. C., Imboden.
Parker, T. A., Richmond.
Traynham, B. L., Jeffs Postoffice.
Watson, E. C., Roanoke.

WASHINGTON.

Patterson, W. M., Seattle.
Rosser, David, North Yakima.

WEST VIRGINIA.

Bloss, J. R., Huntington.
Bush, S. W., Parkersburg.
Crary, H. L., Huntington.
Neal, S. H., Elkhorn.
Marsh, W. A., Margaret.
Sammons, J. L., Calls.
Thornhill, E. O., Prosperity.

WISCONSIN.

Fazen, L. E., Racine.
Garlock, F. R., Racine.
Munkwitz, F. H., Milwaukee.
Rock, J. N., Milwaukee.
Taylor, E. A., Racine.
Wahl, Emil, Milwaukee.
Whyte, W. F., Watertown.
Von Neupert, C. Sr., Stevens' Point.

WYOMING.

Brown, D. E., Laramie.
Bo Dine, C. D., Douglas.
Wigton, H. A., Hanna.

Marriages

WILLIAM MAC ELLIOTT, M.D., to Miss Stella Tombs, both of Bryantsville, Ky.

EDWARD W. COLLINS, M.D., to Miss Lila Routt, both of Denver, February 7.

ROBERT CURTIS BROWN, M.D., to Miss Katherine Butler, both of Milwaukee, February 8.

ALFRED G. DOUST, M.D., to Miss Rose Belle Webb, both of Syracuse, N. Y., February 3.

JOHN B. MAGUIRE, M.D., to Miss Marion McCulloch, both of Lexington, Ky., February 21.

WILLIAM GAEDKE, M.D., to Mrs. Jessie Carrington, both of Bay City, Texas, January 27.

HOMER D. DUDLEY, M.D., Cananea, Mex., to Miss Daisy Sabin of Beatrice, Neb., January 25.

WILLIAM MCC. MILLER, M.D., to Miss Alice Hart, both of Millersburg, Ky., January 29.

FRANCIS ROWLAND PACKARD, M.D., to Miss Margaret Horstman, both of Philadelphia, February 10.

ELMER S. ALLEN, M.D., Arcola, Ill., to Miss Hannah Rowlands of Judson, Minn., at Chicago, January 23.

GUSTAVUS B. THORNTON, M.D., Memphis, Tenn., to Mrs. Mary Bailey Fowler of Griffin, Ga., January 25.

LOUIS PROVANCE MCCORMICK, M.D., Connellsville, Pa., to Miss Katherine E. Felsinger of Northumberland, Pa., February 1.

Deaths

George Ryerson Fowler, M.D. Bellevue Hospital Medical College, New York City, 1871, of Brooklyn, one of the foremost surgeons of New York, died Feb. 6, aged 57, in Albany, N. Y., where he had been in attendance on the centennial meeting of the Medical Society of the State of New York. He died in Albany Hospital from paralytic ileus following an operation for gangrenous appendicitis performed by Dr. Albert Vander Veer, January 29. Dr. Fowler was born in New York, Dec. 25, 1848, the son of Thomas W. and Sarah Jane F. Fowler. He received his preliminary education in the public school of Jamaica, L. I. Soon after his graduation in medicine he devoted his attention to surgery and soon became known as a careful, conservative and skillful operator. He was surgeon to the Methodist Episcopal Hospital, surgeon chief to the Brooklyn Hospital, senior surgeon to the German Hospital, consulting surgeon to St. Mary's, Relief and Norwegian hospitals. He was professor of surgery at the New York Polyclinic. He was examining surgeon of the State Medical Examining Board. During the Spanish-American War Dr. Fowler served as chief surgeon of the Third Division, Seventh Army Corps, under General Fitzhugh Lee, and later was consulting surgeon and chief of the operating staff of the Second Army Corps and accompanied General Lee to Havana, where he organized the hospitals. He was discharged from the service Jan. 31, 1899. He was the author of a treatise on appendicitis which passed through two editions and of many other articles on surgical subjects. Dr. Fowler was taken ill on the train on his way to Albany, January 27, and was removed to the hospital January 29, where he was found to be suffering from appendicitis, and an operation was performed which disclosed a gangrenous appendix, which was removed. The paralysis of

the intestine which was found to be present at the time of the operation persisted, however, and caused his death eight days later.

Julian T. Feild, M.D. Tulane University of Louisiana Medical Department, New Orleans, 1861; a member of the Texas State Medical Association, North Texas Medical Association and Grayson County Medical Society; president of the Denison Board of Health; a surgeon in the Confederate service throughout the Civil War; the first city physician of Denison, serving in that capacity for several years; a member of the City Council for five terms; some time president of the Denison Medical Society; a member of the Twenty-fifth Texas Legislature; for thirty years local surgeon for the Houston and Texas Central Railway; and at the time of his death local surgeon for the Frisco System, died at the home of his daughter in Denison, February 1, after an illness of two months, from Bright's disease, aged 64.

William G. Porter, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1868; a member of the American Medical Association; a member of the College of Physicians in 1872 and for many years its recorder; at one time an interne at Blockley Hospital; physician to the Philadelphia Dispensary, and surgeon at both the Philadelphia and the Presbyterian Hospital, died at his home in Philadelphia, January 30, from pneumonia, aged 59.

Edward Bennett, M.D. New York University, New York City, 1862; a surgeon in the United States Army from 1872 to 1875; one of the leading physicians of San Antonio, Texas, for many years, and city physician in 1875, died January 20 at Santa Rosa Infirmary in that city, from uremia, after a long illness, aged 70.

Claiborne A. Duvall, M.D. Jefferson Medical College, Philadelphia, 1857; a surgeon in the Confederate service during the Civil War, and several times coroner and health officer of Terrebonne Parish, La., died at his home in Houma, January 23, after an illness of several weeks, aged 73.

Lora D. Dennett, M.D. College of Physicians and Surgeons, Baltimore, 1881, a member of the Biddeford and Saco and York County Medical Associations, died at his home in Saco, Maine, January 30, after an operation for appendicitis and hernia, aged 55.

William Nickolous Klemmer, M.D. Jefferson Medical College, Philadelphia, 1893, a member of the Potter County Medical Society, died at his home in Germania, Pa., January 23, from chronic nephritis, after a long illness, aged 46.

Joseph Luce, M.D. College of Physicians and Surgeons of Chicago, 1885, formerly superintendent of schools, died at his home in Chilton, Wis., January 31, a week after a fall on the ice, in which he fractured his hip, aged 56.

William M. Cameron, M.D. College of Physicians and Surgeons in the City of New York, 1889, died at his home in New London, Conn., January 29, from valvular heart disease, after an illness of several weeks, aged 39.

Thomas F. Gibbs, M.D. University of Georgetown Medical Department, Washington, D. C., 1870, died at his home in Washington, D. C., January 30, from paralysis, after an illness of more than three years, aged 68.

Peter M. McGough, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1878, died at his home in Pittsburg, January 24, from pneumonia, after a short illness, aged 50.

J. W. Fuqua, M.D. Medical College of Virginia, Richmond, 1864, a surgeon in the Confederate service during the Civil War, died at his home in Vinton, Va., January 27, after a brief illness, aged 71.

William Heverin Hobson, M.D. Jefferson Medical College, Philadelphia, 1895, of Philadelphia, died in the Samaritan Hospital in that city, from typhoid fever, January 30, aged 36.

William Williams Robertson, M.D. University of Maryland School of Medicine, Baltimore, 1864, died suddenly at his home in Baltimore, January 31, from cerebral hemorrhage, aged 60.

David Barry, M.D. Medical College of Virginia, Richmond, 1862, a surgeon in the Confederate service during the Civil War, died at his home in Ashley, Ill., January 31, aged 70.

James H. Bowen, M.D. Jefferson Medical College, Philadelphia, 1857, formerly a practitioner of Devall, La., died in Montgomery, Ala., January 23, aged 77.

Washington L. Jones, M.D. Louisville (Ky.) Medical College, 1875, died at his home in Ensley, Ala., January 26, from cerebral hemorrhage.

George W. Jordan, M.D. New York University, New York City, 1859, died at his home near Rodman, S. C., January 20.

Book Notices

COUNSELS AND IDEALS. From the Writings of William Osler. Selected by C. N. B. Camac, M.D. Cloth. Pp. 277. New York: Houghton, Mifflin & Co. 1905.

Camac has made an excellent series of extracts from Osler's writings and the choice bits are very happily arranged. Some of the group headings are: "Pioneers in Medicine," "Honesty, Truth, Accuracy and Thoroughness in Medicine," "Patient Devotion to Duty and High Ideals," "Medical Education," "Value of Travel," and "Man's Years of Usefulness and How He May Prolong Them." A subject index adds to the value of the book for reference.

THE PRINCIPLES OF RELIEF. By Edward T. Devine, Ph.D., LL.D., Author of "The Practice of Charity." Cloth. Pp. 495. New York: The MacMillan Co., 1904.

Devine first discusses the fundamental principles which should guide one who grapples with the vital social and economic problem of helping the dependent; then he illustrates both the problem and the methods of relief by case histories and by narration of the organized relief measures taken after some of the great disasters, such as the Galveston flood and the Slocum fire. Charity workers will find this book valuable, as Devine's experience fits him to speak with authority.

DISEASES OF THE HEART AND AORTA. By. T. E. Satterthwaite, M.D. Professor of Medicine in the New York Postgraduate Medical School. Cloth. Pp. 304. Price, $3.00 net. New York: E. R. Pelton.

This book covers the diseases of the heart and aorta. No space is devoted to such subjects as anatomy and physiology of the organ which often preface similar monographs. The text is illustrated by brief histories of numerous cases. It will enable a physician to review heart diseases and to get much important information which can not be found in text-books. Dr. Satterthwaite describes fully his own experience, which gives to the volume the personal flavor desirable in a monograph.

POST-OPERATIVE TREATMENT. An Epitome of the General Management of Postoperative Care and Treatment of Surgical Cases as Practiced by Prominent American and European Surgeons. By N. C. Morse, A.B., M.D., 155 Illustrations and 5 Plates. Cloth. Pp. 468. Price, $4.00. Philadelphia: P. Blakiston's Son & Co., 1905.

This book will be appreciated by the general practitioner. Too often the surgeon who performs an operation sees the patient only once or twice, and the preparation and after-treatment—which are often vital to the success of the operation—are left to the physician in charge, whether he be prepared or not for all the needs of the case. Morse has made up his book from the methods of the best men in surgery. The matter is clearly presented and the illustrations are good.

HELPS AND HINTS IN NURSING. By J. Q. Griffith, M.D., Ph.D. Family Edition. Cloth. Pp. 480. Price, $1.50 net. Philadelphia: John C. Winston Co.

This book is intended, the author states, for use in homes, as a guide in time of sickness, but as it includes, among other things, directions for administering general anesthetics—ether and chloroform—and for the production of local anesthesia by ethyl chlorid and by hypodermic injection of cocain, it certainly is not a book which ought to be put in untrained hands. "A little knowledge is a dangerous thing." The chapters on the nurse's relation to the patient, bed making and bed changing, bathing, preparation of food, method of making local applications and of administering medicines are practical and to be commended.

A GUIDE TO ANESTHETICS for the Student and General Practitioner. By T. D. Luke, M.B., F.R.C.S. Second Edition. 45 Illustrations. Cloth. Pp. 135. Philadelphia: J. B. Lippincott & Co. 1905.

The author states in the preface that the increasing popularity of ethyl chlorid as a general anesthetic is the reason for the new edition of this work. Chapter II is devoted to a discussion of the choice of an anesthetic. The book contains many illustrations showing the various apparatus for administering the different anesthetics. The author writes favorably of the chloroform-ether mixture, which, however, has enjoyed greater popularity in Great Britain than in America. He discusses at some length the difficulties likely to arise during administration of an anesthetic and their management. One

chapter is devoted to a consideration of local anesthesia. Luke believes, evidently, that ethyl chlorid is the coming anesthetic, in England at least.

A MANUAL AND ATLAS OF ORTHOPEDIC SURGERY, Including the History, Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment of Deformities. By J. K. Young, M.D. Illustrated with over Seven Hundred Photographs and Line Drawings, mostly from original sources. Half morocco. Pp. 942. Price, $12.00. Philadelphia: P. Blakiston's Son & Co., 1905.

This ponderous volume, weighing eight and one-half pounds and measuring almost three inches thick, has the appearance of being, and is, padded. The type is commendably large and clear, but some of the space between the lines could be spared, this and the omission of many blank pages would make the book less massive. The publisher's work is less important, however, than that of the author. He says that his work covers the whole field of orthopedics and, so far as we can discover, it does so. Young has taken especial pains with the illustrations. There are over 700 of them, and the examples of characteristic attitudes, deformities, apparatus, methods of treatment, etc., make an atlas of value for the general practitioner.

A MANUAL OF CLINICAL CHEMISTRY, MICROSCOPY AND BACTERIOLOGY. M. Klopstock and A. Kowarsky of Berlin. Translated by T. Wright, M.D. Cloth. Pp. 296. With 132 Illustrations, 70 in colors. Price, $2.25. New York: Rebman Co., 1905.

This is a brief, clearly written and up-to-date manual, giving the most convenient and reliable methods of examining the excretions, secretions and blood for pathogenic micro-organisms and for abnormal cellular and chemical constituents. The technic of staining important bacteria which may occur in conjunctiva, upper respiratory passages, urine, feces and skin, and reliable methods of cultivating such organisms, are given in sufficient detail for those who are familiar with bacteriologic principles. One chapter is devoted to methods of bacteriologic examination and the formulæ of stains and culture media, and another to qualitative and quantitative chemical examinations of the stomach contents. That recent advances have not been neglected is illustrated by paragraphs on the Morax-Axenfeld bacillus, the paratyphoid bacilli, and methods of cultivating bacteria from the blood.

SURGICAL DIAGNOSIS. A Manual for Practitioners of Medicine and Surgery. By O. G. T. Kilani, M.D. Illustrated by 59 full page plates and by engravings in the text. Cloth. Pp. 449. Price $4.50. New York: William Wood & Co.

Had the title of this book read a manual for "students" instead of for "practitioners," it would have more clearly defined its field of usefulness, as it is not comprehensive enough for the internist nor for the general surgeon. Its condensed character, its marginal reference and the extensive use of full-faced type in the text to emphasize the essential points make it particularly valuable in student work. The matter is well arranged, and the illustrations, including a number of *x*-ray plates, are as a rule good. At the end are found a number of tables as a sort of appendix. The heading of one of these, "Identical Symptoms Found in Various Diseases," is decidedly a misnomer as the anesthesia, for instance, of lepra nodosa is not "identical" with the anesthesia of hysteria, nor with that of myelitis, etc., as so classified. There is also a "List of Diseases, Symptoms, Syndromes and Laws Designated by Proper Names" which, although not complete, forms a fitting end to the work.

GALLSTONES AND THEIR SURGICAL TREATMENT. By B. G. A. Moynihan, M.S., F.R.C.S. Second Edition. Revised and Enlarged. Cloth. Pp. 458. Price, $5.00 net. Philadelphia: W. B. Saunders & Co. 1905.

There are few regions of the body so prolific of disturbances as is the upper abdomen, and not until this region was illuminated by the light of the operating surgeon and the living pathology studied, was the obscurity which surrounded many of them dispelled. In affections of the gall tracts particularly much progress has been made and this progress has been well set forth in this work. How well it has been received by the profession is shown by the fact that the first edition came out the latter part of 1904, and by the end of 1905 a second edition appeared, entirely revised and enlarged by some seventy pages. The entire subject has been very thoroughly covered: anatomy, anomalies, etiology, pathology, symptoms, complications, etc., and last but by no means the least important, a full description of the technic of the various appropriate surgical operations for this class of cases. The various conditions are exemplified by detailing concrete cases and illustrated by numerous colored and black and white drawings. The author is a practical surgeon of large experience who understands thoroughly the subject of which he is writing and who expresses himself clearly and concisely. The work is a valuable one to the clinician as well as to the surgeon.

THE BARTON FIRST-AID TEXT-BOOK. A Manual for the Student in First-Aid. B. H. H. Hartung, M. D., First Lieutenant and Assistand Surgeon, Ambulance Corps, M. V. M. Arranged and Illustrated by Roscoe G. Wells, superintendent New England First-Aid Association. Cloth. Pp. 82. Boston: New England First Aid Association.

In view of the number of first-aid manuals worthy of the name now before the public we can find no good reason for the publication of this little book. In it, clearness and accuracy of statement, so essential to the beginner, have been sacrificed by carelessness in style and an unsuccessful attempt at brevity. As notable examples we cite the following:

Page 15: The Lower Extremity consists of the largest and longest bone in the body, called the femur, or thigh bone.

Page 35: Treatment . . . In case of drowning, remove from the water, ...

Page 56: Cauterization is accomplished by thoroughly burning out the wound. . . . . In the case of dog bite never cauterize the wound or kill the dog unless absolutely certain that the dog was mad.

Page 59: Burns produced by alkalies . . . should be treated by the application of acid solutions, such as dilute vinegar in lemon juice . . .

Page 62: Any substance which is taken into the body that will produce death is a poison.

Page 64: If the sufferer is physically or mentally depressed, such as cold hands and feet, blue lips, the face pale, and a cold perspiration upon the forehead and about the mouth, then a stimulant should be given.

Page 75: . . . the strength of an epileptic in a convulsion is quite powerful. . . .

TEXT-BOOK ON THE PRACTICE OF MEDICINE. For Students and Practitioners. By J. M. French, A.M., M.D., Second Revised Edition. 61 Illustrations. Cloth. Pp. 780. Price, $4.00 net. New York: William Wood & Co.

This book is unlike most text-books in that the author has devoted the first part of the book to a short consideration of the classification and causes of disease, taking up the pathology and bacteriology and describing briefly the subjects of nutrition and metabolism. In the preface it is stated that changes and additions have been made to the text in order to bring the work up to date, yet in the chapters on syphilis no mention is made of the recently discovered *Spirochæte pallida*, while in that devoted to yellow fever the *Bacillus icteroides* of Sanarelli is given as the generally accepted cause of the disease. More space than usual is given to tropical diseases. Some of the illustrations are excellent, particularly the charts showing the distribution of guinea-worm and *Filariasis hominis*, while others, particularly the plate illustrating the parasites of malaria, leave much to be desired. Like most text-books on practice of medicine, not enough space is given to treatment. The last part of the work is devoted to a description of the methods of clinical diagnosis, and more particularly to those of laboratory diagnosis, and, while the latter does not exactly belong in a book of this sort, it is a valuable adjunct to the work.

DISEASES OF THE STOMACH AND INTESTINES. By Boardman Reed. Illustrated. Cloth. Pp. 1021. Price, $5.00. New York: E. B. Treat & Co., 1904.

This book is founded on lectures to general practitioners. Much stress is laid on the simple methods of investigating diseases of the stomach and intestines, but the best laboratory methods are not neglected. It seems to have been the author's aim to describe the methods which he regarded as best, rather than a multiplicity of ways of doing the same thing. Speculative discussions and unsettled theories are not considered. This treatise must be regarded as a practical rather than as an exhaustive one. The first three lectures are devoted to the anatomy and physiology of the organs, and the following twelve to methods of examination. Stress is laid especially on what can be learned by observation, palpation and percussion. The chemical and microscopic examination of the contents of the stomach is described. Urine examination and what can be learned from it of value to the student of stomach and intestinal diseases is considered in two chapters. The fifteenth chapter contains "a symptomatic guide to diagnosis,"

by which is meant an enumeration, under such heads as anorexia, breath fetor, foul tongue, constipation, etc., of all of the conditions or diseases in which these symptoms occur. Part III, which includes lectures sixteen to thirty-four, describes methods of treatment, embracing dietetics, exercises, electricity, medicinal therapy, mineral waters, etc. In Part IV individual diseases of the stomach and intestines are described. These descriptions are in the main accurate and full. In a series of lectures it is rare to find a balance of parts as well maintained as in a treatise, and this work may be criticised in this respect. Moreover, the lecture style leads to somewhat greater diffuseness of statement than is best in a treatise. Occasionally the author has allowed extraneous matter to creep in, as in Chapter XI, where a page is devoted to better fees for urinalysis and such work. Also, in the chapters on carcinoma of the stomach, gastrocolic fistula, its causes and symptoms are considered before the symptomatology of carcinoma is described. It is not logical to describe a complication such as this before the disease with which it is associated has been discussed.

Miscellany

INTERSTATE RECIPROCITY.

George W. Webster, M.D.
President Illinois State Board of Health; Secretary Council on Medical Education of the American Medical Association.
CHICAGO.

In considering the question of interstate reciprocity in medical licensure we are confronted by several fundamental facts, a want of knowledge of which is at the foundation of most of the present nebulous, hazy, chaotic ideas in regard to this subject. These are the facts:

First—Everything relating to the whole subject of medical education, including preliminary entrance requirements, the license and control of the practice of medicine, belongs to the state; its regulation and control is an exercise of the general "police power" of the state; it is one of the state's rights with which the federal government has nothing whatever to do.

Second—The State Board of Health, or the examining or licensing board in each state, is, in view of the authority vested in it by the legislature, the only body authorized to determine the condition or terms under which physicians are licensed to practice in that state. This body determines the character of the entrance requirements, the length and character of the medical course, the subjects embraced in the medical curriculum, the time to be devoted to each, the character and scope of the examination, the equipment of the medical college in order to be in "good standing" with the board. The state alone, each for itself, through its examining board, has the sole right to establish and to maintain medical educational standards.

Third—These laws and rules are not made and executed and standards maintained in the interests of the medical profession, but for the protection of the people, it being an inherent, constitutional right with which they are guaranteed—the right to "life, liberty and the pursuit of happiness." This fundamental fact is almost universally overlooked, both by the medical profession and, more especially, by those seeking special legislation in favor of special sects, such as osteopaths and the like.

Fourth—In accordance with its recognized constitutional right, each state has established its own standards, there being no uniformity between them, or at least there was formerly none, but at the present time there is comparative uniformity among some of them.

Fifth—Each of the 157 medical colleges in the United States has adopted a standard of its own for conferring the degree of M.D., but this does not confer the right to practice, as this would be delegating the authority of the state to the medical college.

Sixth—That various associations of medical colleges, state boards, etc., have established standards, but they also have no right to determine and to enforce standards for any state, as this would be delegating the power of the state to some organization, and this would not be tolerated.

Under these circumstances, what can be done to bring about exchange of licenses on a fair and equitable basis A fair exchange can be made only on equal terms. Let us see what has been accomplished. Take Illinois for example. Illinois has determined that an applicant for licensure must have, as a preliminary entrance requirement, a high-school education or its equivalent, must have attended four courses of instruction of not less than seven months each in four separate calendar years in a medical college, the character and equipment of which is determined by the board, must have received a diploma after graduation from said institution and must have also sustained a satisfactory examination in all the branches usually embraced in the medical curriculum, the number of questions in each subject corresponding to its time value in the curriculum. Illinois offers to reciprocate with any state having equal requirements. On this basis Illinois at the present time does reciprocate with the following states: Iowa, Michigan, Wisconsin, Indiana, New Jersey, Maryland, Maine and Kansas.

In other words, here is practical reciprocity on the only rational basis: equal requirements, uniformity in entrance requirements, uniformity in length and character of the medical course and uniformity in the scope and character of the examinations. Uniformity in legislation is also desirable.

How can this scheme of reciprocity be extended so as to embrace all or nearly all the states? I would propose the following:

It should be done through the organized profession, as embodied in the American Medical Association and by its Council on Medical Education. This council should appoint the following committees:

First—A subcommittee on entrance requirements, comprised of, say, ten members, representing the medical colleges, the universities, the high schools and the boards of examiners. Let this committee be given at least a year, or, if necessary, a longer time, to study the whole subject and then to report to the Council on Medical Education what the minimum entrance requirements should be.

Second—A subcommittee of five or ten members for each of the twenty-three subjects in the curriculum, the committee to be selected from the leading educators in each subject and including, if possible, members of examining boards on each subcommittee. Let each of these committees establish a minimum standard and determine how many hours should be devoted to the subject, how much of this time to lectures, to recitations, to laboratory work and to clinics, and what kind of equipment, teachers, etc., are required to teach the subject properly, and the order in which the subject should be taught in relation to other subjects.

Third—An additional committee to determine whether other subjects, such as business methods, history of medicine, etc., shall be added to the present curriculum, and, if so, how much time should be devoted to them and where in the course they should be placed.

The committees, aggregating, in round numbers, 250 of the leading medical educators of the United States, would report to the educational council and it in turn would codify the work, and thus would be established standards of such high order of merit that no one would be able to criticise it successfully. The council would also provide for a plan of regular periodical, perhaps decennial, revision of this standard. Each state and medical society adopting this standard would be entitled to representation in the revision convention.

Then let the council urge the legislative committee of the American Medical Association to work in the interests of uniformity in medical legislation for the states through the legislative committees and examining boards of all the states.

To establish reciprocity it is only necessary for the states to adopt the standards of the Council on Education. As soon as a medical college adopts this standard let it be enrolled as an institution in "good standing," both with the council and with all examining boards that have adopted this standard. As soon as two states have adopted this standard there is reciprocity on a fair, rational, equitable basis. In a very short time a large number of states and the leading medical colleges will have adopted this standard and the others will be gradually brought up to it.

ADVANTAGES OF THE PLAN.

The advantages of this plan are:

1. It secures the co-operation of the American Medical Association and of the medical colleges.

2. It secures the co-operation of the high schools, the medical colleges, the universities and the state licensing boards in the establishment of standard requirements for entrance to the medical colleges.

3. The proposed standards will be more likely to be adopted because all parties concerned in their adoption are participants in their preparation and establishment.

4. It will bring the American Medical Association and the licensing boards into closer and more harmonious relationship.

5. It will bring the American Medical Association and the medical colleges in closer and more harmonious relationship.

6. It not only provides for high, reasonable and uniform standards for the present, but it provides for regular periodical revision by those adopting it and, therefore, interested in its maintenance and perpetuation.

7. It will bring into co-operative harmony the legislative committee of the American Medical Association and the legislative committees of the states.

8. After definite, uniform standards are adopted, it will be easier to secure the enactment of uniform, favorable, desirable legislation.

9. It establishes interstate reciprocity on a reasonable basis.

Tubercle Bacilli.—Piery and Mandoul (*Arch. Gén. de Méd.*, 1905, No. 19), have studied the different types of the tubercle bacillus in the various forms of the disease and summarize their general conclusions as follows: 1. Koch's bacillus takes various forms in the sputa of consumptives; the homogeneous, moniliform, para-moniliform and diplobacillus types are especially noticed. 2. These various forms are derived one from the other and are due to differences of coloration of the peripheral layer of the bacillus which sometimes is tinted like the central framework (homogeneous type), and sometimes, on the other hand, appears more feebly colored (paramoniliform type), and still others remain uncolored (moniliform type). 3. The morphologic and numerical variations in the sputa are in relation both to the evolution of the tuberculous process and to the clinical form of the disease. 4. Their study permits of following clinically the different stages of the tuberculous process and contribute to the diagnosis of the clinical form. 5. On the other hand, the morphology and number of bacilli in the sputa have no prognostic value. 6. The bacteriologic formula (morphology and number of bacilli) of the different forms of pulmonary tuberculosis undergoes modifications in hemoptysis bearing chiefly on the number of bacilli which is generally diminished by the dilution of the blood.

Retention of Salt as a Factor in Obesity.—More and more attention is being given to the reputed possibility of influencing dropsy by the regulation of the intake of salt as the favorable experiences of the French in this line are being confirmed by others. Labbé (*Presse Médicale*, No. 101, page 809) has recently been endeavoring to apply this same theory to obesity, explaining excessive corpulence as due in part to retention of salt with corresponding retention of water. He put two obese patients on the same diet, not salted, but each was given 15 gm. of salt a day, with which to season his food to taste. The amount left in the salt cellar showed how much had been used; the amount eliminated was also determined every day. He found that one patient retained over 40 gm. and the other over 100 gm. of salt in the course of a month. There was no trace of kidney trouble in either. On the basis of this rather limited and questionable experience he theorizes that chlorid retention must be an important factor in the production of obesity, also that the therapeutic restriction of fluids in obesity is irrational, ineffectual and even dangerous, as the tissues become dehydrated and consequently more saturated with salt. This explains, he says, the disturbances sometimes noted when the obese are kept on a dry diet. He declares that they should be encouraged to drink freely, but that the intake of salt should be restricted, and he proceeds to build up somewhat unwarranted conclusions as to the mechanism of his assumed "salting" of the obese. His communication does credit to his powers of imagination working on such scanty material, even if time should prove the correctness of his views in regard to the retention of salt in obesity.

The Irrational Stand of the Antivivisectionist.—The enormous sacrifice of animal life to provide the meat for the extra feasting at Christmas is the subject of comment by the *Medical Press* (London). "Man's merriment in this instance," it says, "is inseparably connected by long tradition with an enormously devastating sacrifice of life among the lower animals. . . . How many antivivisectionists, whose mental attitude commands our sympathy although not our respect, have ever paused to consider the inwardness of the Christmastide slaughter? Have they ever looked analytically on this picture of the butchers' and the poulterers' shops on the one hand and on that picture of the scientific laboratories on the other? Here we see a vast sacrifice of life, representing a vast amount of cruelty, with the sole purpose of providing folk with extra food for their Christmas enjoyment. There we see carefully planned research carried out under the most humane conditions known to science, with one single end and aim, namely, the preservation of human life from suffering and from death. The great fundamental distinction between the two sacrifices of the life of the lower animals in the two instances under consideration is that one is intended merely to satisfy the greedy maw of jovial man, while the other is intended to save him from bodily ills of all kinds. How can a sane, intelligence condone the butcher and condemn the vivisectionist? If anyone said of the butcher what is said every day in the week about the vivisectionist, the antivivisectionist would retort that the objections were sentiment gone mad. Yet all the while he swallows the camel of animal food, but strains with restless and incessant bitterness against the gnat of vivisection. The life of the lower animals is subservient to him for food, for labor, for clothing, for ornament, for anything and everything in his narrow world, in short, save for the one high purpose of acquiring the knowledge of preserving the health and the lives of his fellow-men. As men grow more intellectual and reasoned in their outlook, so will they be likely to regard the question of vivisection in its true perspective."

The Successful Practitioner Reads.—There is something radically wrong with the man who has "no time to read." If he hasn't the time he should take the time, just as he should to eat and sleep. How else can he know what is going on in the medical world and what advances are being made? Does it ever occur to him that the reason he lost that case yesterday was because he is already behind the times--even though he is out of college less than five years? The fact that very likely would have saved the life was in the magazine . . . which he never took the trouble to open. No matter how successful he may be, sooner or later he will be replaced in the affections and confidence of the community by young Jones, who has hard scrabbling enough now, . . . but who is forging to the front, because he has "time to read." It's a strange thing, but you never hear of any men of the first eminence in the profession who have no time to read. Yet they must be busy or all signs fail, for how else did they attain their eminence except by knowing things that others did not know and doing things that others could not do. Read? Why, these men are continually reading. In their "spare moments" they not only keep up with the profession, but keep ahead of it. . . . "No time to read?" My dear friend, it isn't so. The trouble is that you are too lazy; . . . you had rather take a nap or have a "quiet smoke" after the labors of the day or spend your time in some other idle way than to get right down to this building business—this making of better doctors. Gradually, how gradually you can hardly say, you got "out of the notion," and now you delude yourself with the belief that you are "too busy!" My poor friend, you are going to have time enough "for reading" or anything else after a bit. Really, wouldn't it be better to take a little time right now, and keep "in the swim?" "Work?" Of course, it is, but it pays.—*Am. Jour. Clin. Med.*

Antiquackery Campaign.

The German Antiquackery Society, whose official title is the *Deutsche Gesellschaft zur Bekämpfung des Kurpfuschertums*, appeals for support to "all who regard enlightenment of the public in regard to the true nature of quack practices as an imperative task for the civilization of modern social life, and who wish to protect themselves and their fellow-men against injury in time of sickness." It urges all such to promote the aims of this antiquackery movement in the name of hygiene and public welfare. Subscriptions for this German society

should be sent to Dr. G. Siefart, Charlottenburg, Hardenbergstrasse 39, Germany. The annual membership fee is 3 marks, or about 75 cents, a year.

ANTIQUACKERY JOURNAL.

The society has its own organ, a twenty-page monthly, called *Hygienische Blätter*, edited by Dr. Carl Reissig, Hamburg 5, Germany, subscription about 50 cents a year, including foreign postage. It is written in popular style and writes up quacks and irregulars of all kinds, as well as nostrums, in much the same way as we are doing in the department of Pharmacology. The *Hygienische Blätter* is designed to be circulated among the general public, to be left on the tables in physicians' waiting rooms and elsewhere, while at the same time it contains articles suggesting ways and means in which physicians can aid in combating quackery. It is sent free to all members of the society. The October number suggests that physicians should take the pains to learn the past record of quacks and show them up. One of the more prominent German "nature healers" recently referred to the ranks of charlatans in Germany as "containing former jailbirds, frauds of all kinds, rakes and prostitutes," and the police records, when looked up, frequently prove the truth of this assertion.

NOSTRUMS.

One department of the *Hygienische Blätter* is devoted to secret remedies and nostrums, relating instances of injury from them and the results of analysis by experts.

QUACKERY BEFORE THE COURTS.

Criminal proceedings against "nature healers" and quacks of all kinds are recorded, with details, in another department, with an occasional table summarizing the various sentences passed by the courts for fraudulent or dangerous quack practices or for injury from such. The latest list includes 82 cases, in which fine or imprisonment was imposed. Previous criminal proceedings are recorded against many of the names.

ANTIQUACKERY EXPOSITION.

The antiquackery movement in Germany obtained great impulse from the exposition of quack methods which was held at Breslau in 1904 and again at Meran in 1905, in connection with the "Naturforscher Congress." The exhibition is in eight sections: fake ads., nostrums, wholesale quack measures, original remedies, "non-toxic" nostrums, non-operative treatment, electro-homeopathy, magnetism, hypnosis, and the "nature healers." The collection has recently been accepted by the government and added to the collection of "means of instruction to promote the public health," for which a central station has been established to loan the collections as deemed advisable. The collection includes a number of the original formulas of various familiar nostrums, and, arranged beside the fake medical literature, are the articles and decrees from the police and other authorities showing them up, or showing the unsavory details of the careers of the originators. Both expositions attracted crowds of medical and lay visitors, and they are proving one of the most effectual means to enlighten the public in regard to the dangers of nostrums and quacks in general. The *Hygienische Blätter* was first circulated in connection with the first of these exhibitions. The beginning of an international antiquackery movement was recently described on page 132.

Queries and Minor Notes

CAUSE OF INCREASED URINATION AT NIGHT.

——, Iowa, Jan. 30, 1906.

To the Editor:—What conditions might cause the amount of urine excreted during the night to exceed that excreted during the day? The patient is an unmarried woman, aged 55. She is poorly nourished, sallow, and her occupation is an indoor one. She has chronic constipation, which yields to mild laxatives and diet. The arteries are sclerotic, the heart is slightly enlarged, but compensation is good. Neither casts nor albumin can be found in the urine. The family history is distinctly "cardio-nephritic." Since this patient drinks fluid only between 6 a. m. and 6 p. m., and 24-hour tests show nocturnal urine to exceed diurnal, I have been forced to the conclusion that she is probably in the incipient stage of Bright's disease, despite absence of albumin and casts. The patient is greatly bothered by frequent nocturnal urination. Mechanical factors might account for increased frequency, but hardly, it seems to me, for increased quantity of urination at night. There is nothing in the pelvis to cause trouble except slight retroversion.

To emphasize: This patient drinks nothing after 6 p. m. She excretes more urine at night than in day time. Can you justify, on these premises, a diagnosis of deficient renal permeability? C.

ANSWER.—The age of the patient, her poorly nourished condition, the sclerotic state of her arteries, and the enlarged heart with, presumably, increased arterial tension, and in addition, her family history which you characterize as "cardio-nephritic," indicate that this is a case of incipient chronic indurative nephritis or contracted kidney.

The increased urination is not at all rare in this condition, and frequently constitutes, as you correctly surmise, an early sign of Bright's disease. The absence of casts from the urine does not militate against this diagnosis. It is possible, however, that if you will examine many specimens with very delicate tests, you will sooner or later find a little albumin. Senator expresses himself as follows in regard to this matter: "This form of nephritis is frequently overlooked or neglected in the beginning. It develops very gradually, with signs of cardiac hypertrophy and increased arterial tension and usually with some polyuria, and occurring especially at night (pollakiuria)." In regard to the form of nephritis that you are dealing with, which is presumably of the arteriosclerotic variety, the urinary signs are especially liable to remain absent for a long time after increased urination, with cardiovascular signs, make their appearance.

So far as the treatment is concerned, careful attention to the gastrointestinal tract and measures directed toward keeping the blood pressure down will be efficacious in preventing a rapid development of this disease.

ACETANILID IN BROMO-SELTZER.

NORTH PLATTE, NEB.

To the Editor:—Recently I was called to see a man who had taken a heaping tablespoonful of bromo-seltzer. The heart was missing about every third beat, he was cyanosed, and the extremities were cold. The pulse was thready, irregular and intermittent. When I first entered the room I was struck by the dirty appearance of the patient's hands, but on examining them more closely I found they were not dirty but cyanotic. The lips had the same dirty bluish appearance and the ashy gray color of the face reminded me of a cadaver. The temperature was 96 F. The man was bordering on collapse, and I think would have died had not his stomach been emptied and stimulants administered.

D. T. QUIGLEY, M.D.

WASHINGTON, D.C., Dec. 7, 1905.

To the Editor:—Can you give the formula of bromo-seltzer? I find that it is very extensively and freely used, and I think that it would be interesting to know what it is that so many people are taking so frequently, and in such large quantities.

B. M. RANDOLPH.

ANSWER.—We have had analyses made of Bromo-Seltzer as sold in original bottles to the trade. These analyses show that 100 parts of the effervescing salts contain:

Potassium bromid	10.53 parts.
Acetanilid	4.58 parts.
Caffein	1.20 parts.

Assuming an average dose of the article—a teaspoonful—to weigh 76 grains (5.0 gm.) each dose would contain:

Potassium bromid	7 grains (0.5 gm.)
Acetanilid	3 grains (0.2 gm.)
Caffein	.8 grains (0.05 gm.)

Since a half ounce of this preparation is often taken at a dose, and since many, women especially, are taking it daily, it is anything but "harmless."

STATES THAT RECIPROCATE.

—— Iowa, Jan. 31, 1906.

To the Editor:—What states have reciprocity agreements with Wisconsin, Illinois and Iowa? A. B. C.

ANSWER.—There is reciprocity between Wisconsin, Indiana, Michigan, Ohio, Iowa, Kansas, Illinois, Nebraska, Kentucky, Maryland, Georgia, Oklahoma, South Carolina, New Mexico, North Dakota and District of Columbia, on the basis of qualifications as adopted by the American Confederation of Reciprocating Medical Examining and Licensing Boards. Requirements by the various states are so different that the question can not be answered by a general statement. Any physicians desiring to register in another state should correspond directly with the secretary of the licensing board of that state.

MIDWIFERY IN PENNSYLVANIA.

DENT'S RUN, PA., Feb. 1, 1906.

To the Editor:—Can a person without a license or certificate legally practice midwifery in Pennsylvania? B. E. MERRILL, M.D.

ANSWER.—There is no definite statement regarding this in Pennsylvania law. Most states require an examination. Further information may be obtained by writing to Dr. H. S. McConnell, New Brighton, secretary of the State Board of Medical Examiners.

State Boards of Registration

COMING EXAMINATIONS.

MAINE State Board of Registration of Medicine, City Building, Portland, March 13. Secretary, Wm. J. Maybury, Saco.

CONNECTICUT Medical Examining Board, City Hall, New Haven, March 13-14. Secretary, Charles A. Tuttle, New Haven.

MASSACHUSETTS Board of Registration in Medicine, State House, Boston, March 13-14. Secretary, Edwin B. Harvey, Boston.

Arkansas January Report.—Dr. J. P. Runyan, secretary of the State Medical Examining Board of the Arkansas Medical Society, reports the written examination held at Little Rock, Jan. 9, 1906. The number of subjects examined in was 7; total number of questions asked, 61; percentage required to pass, 75. The total number of applicants examined was 44, of whom 28 passed and 16 failed.

PASSED. College.	Year Grad.	Per Cent.
University of Arkansas	(1898) 75; (1900)	75
Rush Medical College	(1884) 77; (1886)	75, 76
College of P. & S., St. Joseph	(1882)	77
University of Texas	(1905)	81
Flint Medical College	(1905)	92
College of P. & S., St. Louis	(1905)	78
Kiel German Med. Coll. for Missionaries	(1878)	77
Kentucky School of Medicine	(1892)	85
Hospital College of Med., Louisville	(1905)	77
College of P. & S., Chicago	(1905)	88
Barnes Medical College	(1895)	82
University of Georgia	(1900)	75
Met. Med. Coll. (The notorious diploma mill!)	(1903)	78
Vienna, Austria*		78
American Med. College	(1905)	81
Tulane University	(1888)	75
Vanderbilt University	(1882)	75
Marion Sims Med. Coll.	(1884)	75
New York Polyclinic Med. Coll.	(1904)	75
Non-graduates	75, 78, 78, 79, 81,	81.7
FAILED.		
Memphis Med. Coll.*		64
College of Indiana	(1880)	65.8
Tufts and American Med. Coll.	(1905)	70
Non-graduates, 34, 39, 54.8, 55.4, 63.4, 66, 67, 68.1, 68.5, 69, 70.8, 72.7.		68.7,

* Year of graduation not given.

Iowa December Report.—Dr. J. F. Kennedy, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Dec. 27-28, 1905. The number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, of whom 5 passed and 3 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
College of P. and S., Chicago	(1905)	81
Hahnemann Med. Coll., Chicago	(1906)	89
National Med. Univ., Chicago	(1906)	85
University Med. Coll., St. Louis	(1906)	83
Toronto University, Canada	(1904)	84
FAILED.		
Hahnemann Med. Coll., Chicago	(1887)	72
Meharry Med. Coll., Nashville	(1902)	69
College of P. and S., Chicago	(1899)	62

North Dakota January Report.—Dr. H. M. Wheeler, secretary of the North Dakota State Medical Examining Board, reports the written examination held at Grand Forks in January. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 27, of whom 23 passed and 4 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Trinity College	(1904)	86
College of P. & S., Chicago	(1898) 77; (1904) 76; (1905)	81
University of Minnesota	(1904) 87.5, 91; (1905)	77, 82
Johns Hopkins University	(1905)	86
Hamline University	(1904) 76.5; (1905)	76, 82
Rush Medical College	(1885) 75; (1905)	78, 81
Northwestern University	(1905)	84
Hering Medical College	(1904)	86
Queen's University, Ontario	(1905)	75
Detroit Medical College	(1904)	83
Sioux City Medical College	(1898)	79
University of Illinois	(1903)	87
FAILED.		
Germany*	(1903)	
University of Christiania**	(1902)	
St. Louis University**	(1905)	
Detroit Medical College**	(1905)	

Two candidates received license to practice because North Dakota reciprocates with the states from which they came.

* This candidate did not produce diploma.

** Below 65 in one or more branches and average therefore not computed.

Ohio December Report.—Dr. D. N. Kinsman, secretary of the State Board of Medical Registration and Examination, reports the written examination held at Columbus, Dec. 12-14, 1905. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of applicants examined was 29, of whom 24 passed and 5 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Cleveland University of Med. & Surg.*	(1897)	75
Cleveland Homeo. Med. Coll.	(1905)	89
Eclectic Med. Inst., Cincinnati	(1891)87; (1904)	75
Jefferson Med. Coll.	(1883) 87; (1892)	92
Medical College of Virginia	(1905)	80
University of Pennsylvania	(1895) 88; (1902)	91, 96
Starling Med. Coll.	(1903)	80
Western Reserve University	(1882) 86; (1905)	88
University of Munich	(1903)	84
Ohio Med. Univ.	(1905) 81, 86,	93, 95
College of P. and S., Cleveland	(1905) 75,	95
Western University, London, Ont.	(1904)	83
Rush Med. Coll.	(1905)	85
Illinois Med. Coll.	(1905)	80
College of P. and S., Baltimore	(1905)	89
FAILED.		
Cooper Med. Coll., San Francisco	(1887)	65
Medical College of Ohio	(1893)	68
Toronto University	(1888)	64
Toledo Med. Coll.	(1904)	71
Helsingsfors University, Finland	(1900)	73

* In 1898 this institution joined with the Cleveland Medical College to form Cleveland Homeopathic Medical College.

Rhode Island January Report.—Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held in Providence, Jan. 4-5, 1906. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of applicants examined was 14, of whom 8 passed and 6 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Baltimore Med. College	(1904) 79.4; (1905)	80.6
Baltimore University	(1904) 75.1; (1905)	76.8
College of P and S., New York	(1903)	84.1
Laval University	(1905)	80.4
University of Naples	(1890)	75
Yale University	(1904)	72.7
FAILED.		
Baltimore University	(1904)	72.7
Kentucky School of Medicine	(1904)	70.6
Laval University	(1905) 66.2	70.8
Medico-Chirurgical College, Pennsylvania*		54.6
University of Ghent	(1896)	59.6

* Year of graduation not given.

South Dakota July Report.—Dr. H. E. McNutt, secretary of the South Dakota Board of Medical Examiners, reports the written examination held at Sioux Falls, July 12-14, and Huron, Aug. 10, 1905. The number of subjects examined in was 12; total number of questions asked, 96; percentage required to pass, 75. The total number of candidates examined was 29, of whom 22 passed and 7 failed. Three candidates were licensed by reciprocity with Illinois and 6 by reciprocity with Iowa. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
McGill University	(1903)	81.3
University of Christiania	(1886)	75
College of P. and S., Chicago	(1896) 85.7; (1905)	75, 81
Creighton Med. Coll., Omaha	(1905)	85.8
University of Edinburgh, Scotland	(1893)	75
Harvard University	(1889)	77.7
University of Buffalo	(1904)	85
University of Minnesota (1897) 81; (1904) 81.6; (1905)		78.1, 80.5
Barnes Med. Coll.	(1905)	79.8
University of Nebraska	(1903)	80.9
Rush Med. Coll.	(1904)	88.7
University of Toronto	(1889) 75; (1904)	85.6
Chicago Med. Coll.	(1896)	82.2
Maryland Med. Coll.	(1904)	78
American College of Med. and Surg., Chicago	(1905)	81.8
University of New York	(1890)	**75
FAILED.		
Starling Med. Coll.	(1903)	*71.3
Washington University, St. Louis	(1904)	*72.6
Drake University	(1886)	72.5
College of P. and S., Chicago	(1905)	70.9
Bennett Med. Coll., Chicago	(1897)	53.9
Barnes University, Missouri	(1905)	68.1
University of Vermont	(1899)	*68.5

* Second examination.

** Third examination.

The following questions were asked:

SURGERY.

1. Give symptoms and differential diagnosis of Pott's disease. What is scoliosis, lordosis, kyphosis? 2. How would you treat a

case of gunshot wound of the lower jaw with a great deal of loss of soft parts and with from one inch to one and one-half inches shattered and blown away? 3. Describe two of the most common dislocations of the hip joint. Give the differential diagnosis of dislocations and intercapsular fracture. Give function of iliofemoral ligament in dislocations of hip. 4. Describe accurately the proper method of locating the fissures of Rolando and Sylvius on the skull. 5. Give diagnosis and pathology of gallstones in bladder and ducts. 6. Describe the course and treatment of a case of infection of the hand and extending up the arm. What are liable to be the results? 7. Describe various fractures involving the elbow joint. Give the important points to be observed in treatment of fractures near joints to prevent excessive callus and anchylosis. 8. Give differential diagnosis between fracture of neck of the humerus and the head of the scapula. Give treatment of the latter. 10. Describe accurately an amputation of the leg at the junction of middle and lower thirds.

BACTERIOLOGY.

1. From what two bacteria must the bacillus tuberculosis be distinguished? 2. Name five bacteria that do not stain by the Gram method. 3. What is Koch's law? 4. Name one bacillus that can not exist in air. 5. How can malaria be diagnosed from typhoid fever microscopically?

ANATOMY.

1. Describe the scapula. 2. Describe the middle meningeal artery, giving origin, branches, and the structures supplied. What difference, if any, in structure of artery as compared with other arteries? 3. Describe muscles of adduction and abduction of thigh, giving origin and insertion of each. 4. Describe the elbow joint and mention bones and ligaments forming it. 5. Describe the bones of the ear. 6. Describe the submaxillary, parotid and suprarenal glands. 7. Ligate the subclavian artery at outer third. Give collateral circulation after. 8. Mention in order the muscles over McBurney's point, and give directions of fibers in each. 9. Describe the spleen. 10. Describe Littre's gland.

DISEASES OF WOMEN.

1. Give differential diagnosis of oöphoritis of right side, and appendicitis. 2. Give cause, diagnosis and treatment of pelvic peritonitis; pyosalpinx. 3. Do a vaginal hysterectomy. 4. Give reasons advanced for Alexander's operation. Describe the operation in detail. 5. Mention symptoms and diagnosis of fibroid tumors of the uterus.

EYE AND EAR.

1. Give differential diagnosis between keratitis and iritis. Give treatment of each. 2. Define astigmatism; synechia; hypoplon; myopia. 3. What muscle or muscles rotate the eye inward and downward? 4. Give three characteristic symptoms of glaucoma, and one important remedy. 5. Give symptoms and treatment of hemorrhage in internal ear.

SKIN AKD VENEREAL DISEASES.

1. Give differential diagnosis of eczema and psoriasis, and give treatment of the latter. 2. Differentiate between syphilis, psoriasis and eczema of the palms. 3. How would you treat herpes zoster? 4. What is meant by gonorrheal orchitis, and how would you treat it? 5. Diagnose and treat secondary syphilis.

CHEMISTRY.

1. Define an element; a molecule; an atom. 2. What are atomic weight, specific gravity, valance? 3. Name the normal constituents of urine. 4. How would you detect sugar in urine? How estimate the daily quantity? 5. What is formed when phosphorus burns? 6. What changes does air undergo during respiration? 7. How would you detect the presence of starch? 8. Give formula for permanganate of potassium. What poisons is it said to antidote? 9. What is fermentation? 10. What is Paris green? Give treatment for poisoning by it.

HOMEOPATHIC PRACTICE AND THERAPEUTICS.

1. Differentiate hepatization of lower lobe of lung and pleuritic effusion. Name one prominent remedy, with indications, for each condition. 2. Describe a clinical case, giving symptoms, in which you would prescribe merc. corr. 3. Name and give indications for two prominent remedies in la grippe. 4. Outline your treatment of cholera infantum. Give indication for the remedies you would use. 5. Name three remedies useful in constipation, giving characteristic indications for each. 6. How would you treat uremic convulsions? Give remedies and dose. 7. On what indications would you prescribe belladonna in throat affections? 8. Describe a clinical case, giving symptoms, in which you would prescribe apocynum. 9. Give stomach symptoms calling for nux, lycopodium, and ipecac. 10. Name two heart remedies, giving indications for their use.

MEDICAL JURISPRUDENCE.

1. What is somatic death? Molecular death? 2. What changes in the skin would indicate death? 3. How would you determine whether death was due to drowning, or to some other cause, when the body subsequently submerged? 4. Define illusion, hallucination, delusion. 5. What is the history of hydrocyanic acid poisoning? What is the antidote?

OBSTETRICS.

1. Describe the lochia. How long does it last? 2. Name the normal presentations of the vertex, and give diagnosis of the one most frequent. 3. Give cause and treatment of after-pains. 4. Give choice, and reason therefor, and the manner of administering an anesthetic in an ordinary case of labor. When would you not use it? 5. Describe minutely the operation for Cesarean section. 6. Describe "birth-marks," and give their cause. 7. What do you do to prevent rupture of the perineum? 8. Describe fully the first care and dressing of the child. 9. Give cause, diagnosis, dangers and treatment in a severe case of antepartum hemorrhage.

GENERAL PATHOLOGY.

1. Describe catarrhal inflammation. 2. Define atrophy. Give varieties of atrophy. 3. What pathologic changes may cicatrices undergo? 4. Name the most common pyogenic bacteria. 5. Where and what are the pathologic changes in bulbar paralysis? 6. Give the possible causes of occlusion of the bile duct. 7. Describe yellow or crude tubercle. 8. What is thrombosis? Describe the manner of its formation. Give some of the lesions in chronic interstitial nephritis. 10. Explain the development of pus corpuscles.

REGULAR PRACTICE AND THERAPEUTICS.

1. Give diagnosis of pneumonia. 2. Differentiate neuritis and rheumatism. 3. Differentiate diphtheria and follicular tonsillitis. 4. What is the significance of prolonged expiration? 5. Give the physical signs of a cavity of the lungs in pulmonary tuberculosis. 6. Define therapeutic incompatibility; chemical incompatibility. 7. Outline the treatment of uremia. 8. Compare opium and belladonna as to action on the heart. 9. What serious results may ensue from indiscriminate use of acetanilid? 10. Give treatment for ulcer of the stomach. 11. Give name and dose of each of five emetic preparations of opium.

ECLECTIC MATERIA MEDICA, THERAPEUTICS AND PRACTICE.

1. Give names and doses of three general anodynes. 2. Give the official name and the composition of Fowler's solution. 3. Write a prescription containing drugs that are chemically incompatible. 4. What precautions should be used in giving medicines by the hypodermic method? 5. Describe the manner of giving sulphuric ether. 6. In what diseases would you give salicylic acid? Dose of same. 7. Write a prescription for general debility. 8. What remedies would you use in obstinate vomiting, due to pregnancy? Doses of same. 9. Give treatment for night sweats. 10. Describe and treat a case of rubeola.

PHYSIOLOGY.

1. Describe the white blood corpuscles, and give their source and functions. 2. What changes are produced in the air by respiration? 3. Describe the normal heart sounds. 4. Describe the lymphatic system. 5. Give the time, and order of eruption, of the temporary set of teeth. 6. Differentiate between tonic and clonic muscular contractions, and give an example of each. 7. What conditions produce variation in the normal temperature of the body? 8. Describe the human blood. 9. What gives color to the skin? 10. What are the causes of death from asphyxia?

Vermont January Report.—Dr. W. Scott Nay, secretary of the Vermont State Board of Registration, reports the written examination held in Montpelier, Jan. 9-11, 1906. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of applicants examined was 2, both of whom passed. The following colleges were represented:

	PASSED.	
College.	Year Grad.	Per Cent.
University of Louisville	(1905)	85.9
Jefferson Medical College	(1905)	84.7

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending February 3, 1906:

Bushnell, George E., surgeon, granted thirty days' leave of absence.

Gandy, Charles M., surgeon, granted ten days' leave of absence.

Clarke, Joseph T., surgeon, granted three months' leave of absence.

Roberts, Wm., asst.-surgeon, ordered to proceed from Fort Hamilton, N. Y., to Fort Jay, N. Y., for temporary duty.

Grissinger, Jay W., asst.-surgeon, leave of absence extended ten days.

Newlove, George, contract surgeon, reported at New York for duty as surgeon of the transport *McClellan* on its next voyage to the Philippines.

White, J. Samuel, contract surgeon, left Fort Snelling, Minn., for New York City, to accompany the First Infantry thence to Philippine service.

McCallum, Francis M., contract surgeon, accompanied troops from Fort D. A. Russell, Wyo., to Seattle, Wash., and returned.

Brown, Wilmont E., contract surgeon, ordered from Fort Walla Walla, Wash., to Boise Barracks, Idaho, for temporary duty.

Dickinson, Clarance F., contract surgeon, ordered to accompany the Second Infantry from Fort Logan, Colo., to San Francisco, Cal., and thence to Philippine service.

Dillon, G. Parker, contract surgeon, ordered from Fort McDowell, Cal., to Army and Navy General Hospital, Hot Springs, Ark., for treatment.

Kuhn, Charles F., contract surgeon, arrived at Fort William H. Seward, Alaska, for temporary duty.

Waddell, Ralph W., dental surgeon, returned to Fort Leavenworth, Kans., from temporary duty at Fort Washakie, Wyo.

Whinery, Jean C., dental surgeon, arrived at Fort Wright, Wash., for temporary duty.

McAlister, John A., dental surgeon, returned to Presidio of Monterey, Cal., from leave of absence for two months.

Macy, Fred S., contract surgeon, left Allegheny Arsenal, Pa., for duty at Fort Adams, R. I.

Van Kirk, Harry H., contract surgeon, returned to Fort Sill, Okla., from march with Field Artillery to Fort Sam Houston, Texas.

Navy Changes.

Changes in the Medical Corps, United States Navy, for the week ending Feb. 3, 1906:

Rothganger, G., surgeon, detached from the naval hospital, Norfolk, Va., and ordered to the naval hospital, New York, N. Y.

Farenholt, Surgeon A., detached from the *Raleigh* and ordered to the *Oregon*.

Freeman, G. F., passed assistant surgeon, detached from the naval station, Cavite, P. I., and ordered to the *Raleigh*.

Wheeler, L. H., assistant surgeon, ordered to the naval station, Cavite, P. I.

Rixey, P. M., surgeon general, commissioned surgeon general and chief of the Bureau of Medicine and Surgery, Navy Department, with the rank of rear admiral from Feb. 5, 1906.

Gatewood, James D., surgeon United States Navy, designated by the acting secretary of the navy, is detailed as a member of the joint board of medical officers of the army and navy, appointed by orders of Jan. 11, 1906, War Department, to consider improvements in the first-aid dressings and uniformity of equipment for the medical departments of the two services, vice Surgeon Charles F. Stokes, United States Navy, relieved. War Department, January 31.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended January 31, 1906:

Kalloch, P. C., surgeon, reassigned to duty at Portland, Me., Quarantine Station.

Cofer, L. B., P. A. surgeon, letter granting leave of absence for twenty days, from January 19, amended to read twenty days from January 20.

Grubbs, S. D., P. A. surgeon, granted twenty-one days' leave of absence from February 2.

Anderson, J. F., P. A. surgeon, resigned to duty in the Hygienic Laboratory, effective January 23.

Hobdy, W. C., P. A. surgeon, relieved from duty at Honolulu, Hawaii, and directed to proceed to San Francisco Quarantine Station and assume command of the service, relieving P. A. Surgeon N. S. Cumming.

Corput, G. M., P. A. surgeon, directed to proceed to Kenner and other places in Louisiana for special temporary duty, on completion of which to rejoin station in New Orleans, La.

Corput, G. K., P. A. surgeon, granted five days' leave of absence from January 16, under provisions of Paragraph 191 of the Regulations.

McLaughlin, A. J., P. A. surgeon, relieved from temporary duty at Berlin, Germany, and directed to rejoin station at Napies, Italy.

Collins, Geo. L., asst.-surgeon, granted leave of absence for two days from January 22, under provisions of Paragraph 191 of the Regulations.

Stearns, W. L., pharmacist, granted five days' extension of leave of absence from January 27.

Waterlus, Matthias, pharmacist, granted thirty days' leave of absence from February 15.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague, have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended February 2:

SMALLPOX—UNITED STATES.

Arkansas: Fort Smith, Jan. 13-20, 1 case.
California: San Francisco, Jan. 13-20, 14 cases.
Delaware: Wilmington, Jan. 20-27, 3 cases.
Florida: Alachua County, Jan. 20-27, 3 cases; Gadsden County, 1 case; Jacksonville, 8 cases; Polk County, 1 case.
Kentucky: Covington, Jan. 20-27, 8 cases.
Louisiana: New Orleans, Jan. 20-27, 4 cases.
Maryland: Baltimore, Jan. 20-27, 1 case.
Nebraska: South Omaha, Jan. 13-27, 8 cases.
Ohio: Cincinnati, Jan. 19-26, 7 cases; Dayton, Jan. 20-27, 1 case.
South Carolina: Camden, Jan. 13-20, 1 case.
Wisconsin: Appleton, Jan. 20-27, 8 cases.

SMALLPOX—INSULAR.

Porto Rico: San Juan, Dec. 1-31, present.

SMALLPOX—FOREIGN.

Argentina: Buenos Ayres, Oct. 1-31, 47 deaths.
Canada: New Brunswick: Queen's County, Jan. 9-18, present; Sunbury County, Jan. 9-22, 106 cases.
China: Shanghai, Dec. 21, present.
France: Paris, Jan. 6-13, 17 cases, 1 death.
Ecuador: Guayaquil, Dec. 17-24, 2 deaths.
India: Bombay, Dec. 26-Jan. 2, 7 deaths; Calcutta, Dec. 9-16, 20 deaths; Karachi, Dec. 25-31, 3 cases, 1 death; Madras, Dec. 16-29, 15 deaths.
Italy: General, Jan. 4-11, 22 cases.
Mexico: Tuxpam, Jan. 16-23, 1 death.
Russia: Odessa, Dec. 30-Jan. 6, 16 cases, 2 deaths; St. Petersburg, Dec. 23-30, 10 cases, 3 deaths.
Spain: Barcelona, Jan. 1-10, 4 deaths; Cadiz, Dec. 1-31, 1 death.
Turkey: Constantinople, Dec. 17-31, 8 deaths.

YELLOW FEVER—UNITED STATES.

Louisiana: Jefferson Parish (Kenner), Jan. 28, 1 case.

YELLOW FEVER—FOREIGN.

Ecuador: Guayaquil, Dec. 17-24, 8 deaths.
Mexico: Merida, Jan. 14-29, 2 cases, 1 death; Vera Cruz, 2 cases, 1 death.

CHOLERA—FOREIGN.

India: Calcutta, Dec. 9-16, 61 deaths; Madras, Dec. 16-29, 10 deaths; Rangoon, Dec. 16-23, 13 deaths.
Russia: Government, Lomza, Dec. 23-30, 4 cases, 1 death; Ostrow, 1 case, 1 death; Plock, Dec. 4-17, 50 cases, 20 deaths; Siedlec, Nov. 23-Dec. 25, 22 cases, 10 deaths; Warsaw, to Dec. 18, 9 cases, 5 deaths.

PLAGUE—FOREIGN.

Africa: Portuguese East Africa, Chinde, Nov. 12-18, 1 case, 1 death.
India: Bombay, Dec. 26-Jan. 2, 9 deaths; Calcutta, Dec. 9-16, 21 deaths; Karachi, Dec. 24-31, 20 cases, 15 deaths.
Japan: Shimonseki, to Dec. 23, 5 cases.
Mauritius: Dec. 8-20, 15 cases, 12 deaths.
Peru: Callao, Dec. 11-20, 1 case, 1 death; Lima, 1 case, 1 death; Mollendo, 1 case; San Pedro, 4 deaths.

Medical Organization

Illinois.

MOULTRIE COUNTY MEDICAL SOCIETY.—Physicians of Moultrie County met at Sullivan recently and effected organization with the following officers: President, Dr. W. E. Stedman, Sullivan; vice-president, Dr. Howard Hamilton, Bethany; secretary and treasurer, Dr. Zerfass, Sullivan, and censors, Drs. W. P. Davidson, Sullivan; John D. Hardinger, Gays, and William H. Davis, Bethany.

Good Results from Organization.

CLATSOP COUNTY (ORE.) MEDICAL SOCIETY.—The secretary of this society, in a recent communication, says: "Our society is small, but includes every licensed practitioner in the county; we meet every two weeks, have excellent papers followed by discussion, and in addition to taking up subjects that are of interest to the profession, have interested ourselves in matters that pertain to the public welfare. Previous to the formation of our society the local physicians were scarcely on speaking terms with each other; now every man is an active member, we meet socially as well as professionally, and our only regret is that we did not get together many years ago."

The Physician's Relations to His Professional Associates.

As a merchant takes account of stock each year in order to ascertain the condition of his business and whether he is progressing or retrogressing, so each of us should from time to time interrogate himself, and see whether we are doing the best and the most with our abilities and opportunities. Let each one of us occasionally ask himself a few pertinent questions and endeavor to answer them frankly and truthfully. He who can not be true to himself is hopeless, for he can not be true or honest to anyone, or under any circumstances be considered absolutely reliable.

As a member of a learned and liberal profession, what is my relation to that profession and to the community in which I live? Am I living so as to bring credit and repute to myself and to my profession? When I consider my brother physicians in my vicinity, is my heart free from envy, hatred and malice, am I dwelling at peace with them, and if not—why? Is the fault entirely theirs? Have I not allowed some false rumor or the idle talk of some irritable patient to prejudice me against a brother practitioner, and have I taken the trouble to verify the statements made to me? In fact, do I know him sufficiently well to judge him in any particular? Have I met him socially and professionally, and have I tried to find out his good points and his professional ability, and to be at peace with him, or have I ignored him, failed to attend my county medical society because he was likely to be there, and because I was foolish enough to believe the stories carried to my ears and so did not wish to associate with him? Have I treated him fairly and as I would have him treat me, under similar circumstances?

Toward the physicians younger than myself, or to those who have more recently come here, have I extended the hand of fellowship, and have I welcomed them in a brotherly way; or have I criticized and belittled them and endeavored to make their path as rough, as unpleasant and as impossible as I could? Have I acted the part of a broad minded, well educated and skillful member of the greatest of the liberal professions, and thus brought credit and repute to that profession as well as to myself, or have I acted the part of a jealous, petulant man, and through my derogatory comments and criticisms—which were in the main untrue—brought discredit to a brother practitioner and to myself and my profession?

The science and art of medicine is progressing rapidly in these days, and to keep pace with it, that physician who will be properly equipped so that he may give his patients the very best that medical learning can provide, must be ever a student, must read and study carefully the writings of many men. Have I done this, or have I simply stagnated, remained stationary and allowed the stream of medical knowledge to go by me? Am I as well equipped as I should be to attend to the wants of my patients? Have I been giving to my patients remedies the composition of which I am ignorant, and thus possibly endangering some one's life, or have I used that knowledge and judgment in prescribing which my patients assume that I possess? In general, am I as good a doctor as I should be?

These and many other questions are such as we should ask ourselves from time to time. How many who read them and truthfully catechise themselves can answer them satisfactorily? Particular stress is laid on the personal relation of the phy-

sician to his professional brethren, for it is the most important relation in professional life. Without association with others of his kind, progress and education are very difficult, nay, well nigh impossible.

The solitary and isolated life of the physician leads him toward two deadly dangers: egotism and narrow-minded ignorance. In the course of his work he meets with sick people—his patients—and but seldom with his brother physicians. His patients rank him high and compliment him, not knowing whether he be doing his work as well as he should or not; and unconsciously he elevates himself in his own estimation, and too often looks down on and belittles his fellows. Thus there is lacking the incentive to study, to progress; he overestimates his own knowledge and attainments. Frequent association with other physicians who are doing as much or more work, and as good or better work than he is doing himself, is the very quickest and surest way of removing these elemental delusions of grandeur and of re-establishing in such a physician a more healthy mental tone.

Society Proceedings

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Centennial Meeting, held at Albany, Jan. 30, Feb. 1, 1906.

The President, DR. JOSEPH D. BRYANT, New York, in the Chair.

Cleveland Urges More Medical Knowledge for Public.

This meeting marked the reunion of the two medical bodies of New York state after a separation of twenty-five years. Ex-President Grover Cleveland was one of the speakers and took as his theme the further education of the public in matters medical. He referred to the old-time doctor who surrounded his methods of diagnosis and treatment with much mystery. This habit has been largely done away and is now the property of the quack. Mr. Cleveland urged that the medical profession go further and tell the patient more about what is the matter with him, the causes of it, how it may be relieved and what particular method is used in the particular case. He felt that the time is ripe for this step.

Bryant's Happy Address.

The president DR. BRYANT, in his address said that the medical profession of the country regards this occasion as one of the most important in the history of its existence. "For a painfully long period of time the open contention existing in the medical profession of this state has robbed the profession of the significant influence in medical and public matters freely accorded to much less beneficent and potent bodies of men. Bodies illy inclined to salutary measures and encouraged chiefly because of their forceful organization, even in the attainment of self-seeking aims, have badly defeated the wholesome endeavors of the disorganized opposition of magnanimous and earnest medical desire. Too often, indeed, in the past divided medical counsel or half-hearted medical support has failed to beget the respectful consideration, on the part of those in authority, due to the justice of a cause championed by the medical profession. How often, in fact, has it happened within the easy recollection of us all that we have fittingly been told by those in authority: 'When you can agree among yourselves, then come to us for aid!' This reason or excuse, whichever it may have been, can no longer be regarded as available for the diplomatic purposes which it has served in the past. The enrolled regular physicians of the state—not less than 6,500 in number—are to-day a united body of attentive medical men, laboring in common for commendable interests and beneficent causes. The medical profession of the state can now take hold with a firm, confident grasp in support of wholesome public-spirited propositions and of medical advance with the full consciousness of the fact that their united desire, or their confirmed opinion, will constitute a bulwark of moral force not to be misjudged nor indifferently considered. Please note the fact, my friends, that I refer to general medical and public propositions, meaning general professional and public duty, not private nor personal propositions relating more often than otherwise to private or personal desire, too frequently strongly tinctured with self-seeking motives.

"So long as the medical profession shall contribute its part to the interests of the public good, the public servants will heed its admonitions and respect the logic of its appeals. But when unwise personal desires or clanish purposes shall proselyte patriotic or disinterested efforts, then will the hold on public esteem be loosened and medical appeals to public confidence become of much less avail or respectful consideration entirely forfeited. In every community, as well as in the state at large, there are broad and fertile fields for the encouragement and practice of general and special good. Therefore, 'Be ye not weary in well doing,' as the reward for all such labor as this is munificent and ever exercising its influence in behalf of those who actively foster healthy sentiments."

He said that the membership of the society was 6,500, and urged that every regular physician in the state should be a member in good standing. Every one thus enrolled should recognize that he himself is an active unit—if he shall choose so to be—and of as much importance as is any other individual unit of the organized body. "And when he shall have recognized these facts, there yet remains another of far greater significance to be known, the fact that this relationship carries with it profound responsibility—the exacting creator of onerous duty, fortified, let us hope, with abundant love for just causes; duty to ourselves and to our professional brother, to our profession, and to the people at large, and to all things that shall glorify our calling and add to the enlightenment of the world."

Dr. Bryant praised the "extraordinary zeal and infinite patience of the Joint Committee of Conference, to which some time ago the fortunes of the independent medical bodies were mutually and wisely entrusted. Although the members of the committee have builded slowly, they have builded intelligently and for all time, and in strict accordance with the letter of the law regulating such matters. Much yet remains to be accomplished under the order of the court before the control of the affairs of the great body can be relegated by the ad interim House of Delegates to the completed organization. I hope that all who are engaged in the completion of this great work will co-operate promptly and cheerfully with those now vested by the court with the construction of the legal framework required for the purpose."

The election of officers was announced in THE JOURNAL last week.

Prize Money Provided.

DR. LUCIEN HOWE, Buffalo, sent $1,500 to the society as a nucleus for a fund to provide prizes for essays.

An excellent scientific program was carried out.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Regular Meeting, held Dec. 7, 1905.

The President, DR. RICHARD C. NORRIS, in the Chair.

The Uterus and Ovary of Chronic Neurasthenia.

DR. ROBERT L. DICKINSON, New York, presented the results of a study based on one hundred cases.

The associated lesions and their frequency were as follows: Chronic ovaritis, chiefly microscopic, was found in nearly all the cases. Endometritis, usually cervical, was present in the majority of cases (61) and was seldom accompanied with thickening of the endometrium. A high degree of sclerosis of the vessels of the uterine walls and of those of the endometrium was sometimes discovered in cases of long standing, and the venous enlargements were many. Certain hypertrophies about the vulva were noted in the majority of cases (65). In the bladder, congestion of the trigone was frequent (about 40 cases). In the rectum, catarrh, congestion and atony were present in a large number of cases. Pelvic symptoms were prominent, and lumbar pain was constant. In almost all of these cases the pelvic disorder was coincident, not causative. Dickinson found that correction of moderate abnormalities of structure and function by prolonged local treatment or by operation lessens pelvic pain very little and betters the general condition not at all. Treatment should be directed almost entirely to the general condition. Operation on pronounced pelvic lesions is warrantable in a few selected

cases, such as persistent and exhausting hemorrhages and the larger tumors, and, if thorough-going, brings about a cure, revolutionizing the general condition in a very small percentage of cases. Anatomic cure frequently fails to bring about symptomatic cure.

Dickinson excluded from his list the congenitally delicate, hysteria, melancholia, milder cases, and all not subject to long observation. Many were old office habitués. All complained of sacral pain; 46 complained of cramps at the periods; 43 of irritable bladder; 24 of leucorrhea, and 10 were entirely free from any pelvic disturbance, except backache. The averages of anteflexion and retroversion usual in gynecologic office practice were found. Among 21 retroversions there were 10 operations, all anatomic cures, but obtaining only partial symptomatic relief. All were glad they had it done a short time after operation, but only two were entirely happy about it two years after. Chronic ovaritis, present in gynecologic practice in some 15 per cent. of cases, was seen with surprising frequency. Of 20 confirmed neurasthenics (some outside this series whose ovaries were studied at celiotomies), 20 had distinct microcystic ovaritis. Long-continued tension resulting in alterations in the walls of the vessels of the endometrium and uterine walls was emphasized in this class of cases. In 4 cases intractable menorrhagia called for hysterectomy. The holding up of varicosities of the broad ligament and bladder wall on a pessary explained some improvements. Endometrium, uterine wall, ovary, bladder base, rectal mucosa—all suffered from disturbed vasomotor balance, persistent venous engorgement and sometimes arterial spasm and thickening. Masturbation, evidenced by pronounced corrugated hypertrophies of the labia minora and prepuce and fourchette and enlarged and tabbed meatus (found in 1/3 of all cases in ordinary office gynecologic practice), was detected in 2/3 of the pronounced neurasthenics.

What was new in this small series of cases was the analysis, from the standpoint of the gynecologist, of the relations of pelvic disease to long-standing neurasthenia; the claim of the frequency of chronic ovarian changes, of chronic congestions of the trigone and lower bowel, and of vulvar hypertrophies; the statement that latero-cession and thickening of the left utero-sacral ligament and broad ligament with left-sided ovaritis, in the absence of adhesion, is always due to chronic proctitis; and figures bearing on the small percentage of cures after operation. In conclusion, the author laid great stress on regulation of activities, on training in outdoor life initiated in wisely-conducted sanitariums.

DISCUSSION.

DR. F. X. DERCUM agreed with Dr. Dickinson that in the great majority of cases pelvic disease and neurasthenia, when co-existent, are coincident, and that there is no causal relation between them. One factor, however, to be considered is that neurasthenia, pure and simple, is synonymous with chronic nervous fatigue. The symptoms are characteristic and definite, and the affection constitutes a well-defined fatigue neurosis. Associated with this exhaustion is irritability. In consequence there is in neurasthenia an undue reaction of the nervous system to either peripheral or somatic impressions. For this reason local pathologic conditions might bring about undue reaction in neurasthenia, while in a state of nervous health such conditions may attract no attention. He entirely agreed with Dr. Dickinson that in the chronic and aggravated type of neurasthenia, in women, pelvic symptoms are prominent. He formulated his conclusions on the subject of neurasthenia in women as follows: 1. That neurasthenia may exist independently of any pelvic disease. 2. That neurasthenia and pelvic disease may exist independently in the same patient. 3. That when pelvic disease and neurasthenia co-exist, the pelvic symptoms may be more readily recognized by the patient and, therefore, become more prominent, because in neurasthenia the reaction of the nervous system to abnormal and pathologic impressions is exaggerated.

Pelvic disease never causes true neurasthenia. It might produce general ill health, but the nervous symptoms present are never the symptoms of neurasthenia. That various signs of nervous weakness are present in serious local or general disease, weakening the entire organism and, with it, the nervous system, is not surprising. To this state he applied the term of spurious neurasthenia or neurasthenia symptomatica. This is seen in chlorosis, phthisis, syphilis, in the various diseases of the blood, in malignant disease, in the toxemias and in other grave disturbances of nutrition. The nervous symptoms directly due to pelvic disorders, he said, are exceedingly limited. While it was true that there is present pelvic pain, pain referred to the back, to the hips, to the thighs, with indications of general ill health, these symptoms can not be grouped as a separate nervous disorder, but are part of the pelvic disease itself.

He believes that a dispassionate consideration of the subject leads to the conclusion that the surgeon should operate for surgical indications only. The minor pelvic troubles disappear on the institution of rest, full feeding, massage and the like and when the general health of the patient has been brought to a physiologic level.

DR. BARTON COOKE HIRST said that this experience has taught him that the gynecologist does better if he forgets that the patient under examination is a neurasthenic, or if he does not know it. In his opinion, the function of the specialist in pelvic disorders is to examine and report on the pelvic organs and, if disease is found, to give the appropriate advice without necessarily taking into account the patient's general condition, except as a contraindication to operation. If pelvic disease coincident with neurasthenia is discovered, it should be remedied, if possible, in order to put the patient in a better condition for being cured of her neurasthenia, but without expecting that the gynecologic treatment will directly benefit the neurasthenia. Long-continued local treatment for minor pelvic conditions, which might fasten the treatment habit on the woman, should be avoided.

DR. CHARLES K. MILLS said that the neurasthenic condition should be lost sight of and attention and treatment concentrated on the pelvic disorders. His experience with neurogynecologic cases has taught him that in many of the cases the conditions presented to the neurologist and gynecologist are dependent on neurotic or neuropathic tendencies in the individual. In the study of aggravated nervous symptoms apparently dependent on disorders of the pelvic organs, the exact cause should be determined, whether it lay in the pelvic condition or in the nervous constitution. In a large majority of cases the explanation is to be found in a study of hereditary predispositions. Attention should be directed to the presence of any real disorders of the pelvic organs, in connection with other treatment. Neurasthenia, like hysteria, he said, is not a disease of the uterus or its appendages, but is primarily a disease of the nervous system. Attention should be directed to the relief of an inherited or of an inherited plus an acquired condition of the nervous system.

DR. J. M. BALDY stated that few competent gynecologists of to-day operate on aggravated cases of neurasthenia. He thinks that, if, when these cases come to the gynecologist, he could forget that they had pelvic symptoms, both the patients and the gynecologists would be fortunate. He thinks that an examination of as many non-neurasthenic women will disclose much the same condition as Dr. Dickinson found in his patients. With Drs. Mills and Dercum, he does not believe that neurasthenia is caused by pelvic lesions, although it might be aggravated in some few cases. Operation, except in a very few well-selected cases, can only do harm. Beyond falling into the hands of an operating gynecologist, he knows of but one equal misfortune for these much-afflicted individuals, and that is to fall into the hands of a rest-cure neurologist. Dr. Baldy stated his fear that his emphatic views concerning the treatment of neurasthenia are not in accord with those of the majority of neurologists and gynecologists. Rest is needed, but only as applied to the nerves, and the rest needed is rest from the irritating elements which are wrecking those organs. The fatigue is purely a nerve fatigue and not a muscular fatigue. Let no man, however, who wished to cure his patient make the mistake of assuming that rest meant rest of the muscles and general physique. This can not be brought about abruptly nor in the same manner in all classes of patients, but the principle can be applied to all. Force the patient, in spite of all pretexts, protests or sympathies, to an

active out-of-door life, with proper hours of rest and regulated diet, milk and eggs constituting a large element in the latter. The "rest-cure," he declared, in any of its phases, is pernicious, and sanitariums are the last places in the world for these cases.

DR. WILLIAM G. SPILLER said that he does not believe that neurasthenia in most cases can be cured by treatment of the generative organs. He is in accord with the view that in the presence of mild disorders of the reproductive organs it is better not to give any treatment to these organs, because attention directed to them aggravates the neurasthenic symptoms. If, however, the symptoms of disease of the degenerative organs are severe, he advises treatment of the lesions, because, until they are treated, there is little hope of improving the neurasthenia. Dr. Spiller believes oöphorectomy to be one of the most serious operations that can be performed on a neurasthenic woman, not from a surgical point of view, but he stated that the neurasthenic women who have had ovaries removed are often hysterical and are among the most difficult patients to treat. He believes that the ovaries have some effect on the general health of the individual, especially in younger women. He scouts the possibility of a relationship existing between disorders of the reproductive organs and brain tumor, although the effect of a brain tumor in arresting menstruation had been repeatedly observed. Regarding functional disorders, he said, it must be acknowledged that severe disease of the ovaries leading to removal might awaken a latent neurosis which otherwise might never become manifest.

DR. JOHN G. CLARK said that, in the minds of many physicians, neurasthenia and hysteria are almost interchangeable, notwithstanding the wide difference between the two conditions. Charcot described a type of hysteria associated with ovarian pain and located a point at the intersection of a line drawn from the anterior superior spines of the ilium and the outer border of the left rectus muscle, which has been designated as "Charcot's point." This class of patients complain constantly of pain in this area. The point does not correspond to the situation of the ovary, and, as a result of this fallacy, innumerable ovaries have been removed in the past with the thought that the pain would be relieved. He is convinced that this pain had nothing to do with the ovaries. The word neurasthenia, he thinks, is used to cover a multitude of evils, serving about the same purpose for various bizarre nervous symptoms that the word malaria does for an unexplained fever. Asthenia, with nervous manifestations, is classed under the term neurasthenia. From a clinical standpoint, the gynecologist might safely consider these cases under one of three headings: (1) Pure neurasthenia of congenital origin, with morbid pelvic introspection, but without even a microscopic organic lesion; (2) a neurasthenia which is coincident with a given organic lesion, but not dependent on it, although it may greatly exaggerate it; (3) a neurasthenia entirely dependent on an organic lesion.

The patient with neurasthenia of hereditary origin should never have gynecologic treatment, but should be turned over to the neurologist or to any other person capable of diverting the unhealthy stream of her imagination. Such a patient naturally complains of all the ills to which flesh is heir, and if the generative organs become the point of her introspection the gynecologist can not cure her by operative interference. Such a person, becoming the subject of an operation, is likely to establish the operative habit, which has been very appropriately called "mania operativa minora."

In the second class of cases, neurasthenia coincident with some pelvic lesion, the nervous symptoms are usually exaggerated by the pelvic disease; consequently, in such a case this trouble is likely to be improved, although a cure of the neurotic phase of the case is naturally not to be expected. In the third class of cases, neurasthenia incident to pelvic lesions, he said, there can be but one viewpoint, and that is the sooner the pelvic lesion is relieved the greater will be the chance for perfect cure of the neurasthenia. If such a case drifts on for weeks or months, the neurasthenic habit might be so completely fixed by the time operation is done that months or years might elapse before such a woman could recover her nervous equilibrium. Such cases are represented by the various hemorrhages of the menopause. In such cases suffering from recurring hemorrhages of the menopause or from some new growth, and, with increasing anemia developing, intense neurasthenia should have immediate treatment to stop the hemorrhage, even if hysterectomy is necessary. Such cases make ideal recoveries.

In the treatment of all three of these classes of cases Dr. Clark believes that the skill of the surgeon is tested thoroughly. Every phase of the patient's past life should be traced concerning the various possible manifestations of neurasthenia. The chief point from the operative standpoint is the past history. Gynecologists of experience look on oöphorectomy as one of the gravest operations. Unfortunately, young women of 20 or 23 years of age, who have been operated on for double pyosalpinx, frequently drift into the hands of the neurologists and there is formed an unjust prejudice against the operation or the operator on account of the postoperative sequelæ. Under the stress of pathologic conditions, however, the gynecologist has been forced to intervene. A large proportion of these patients, however, after having passed through a stormy premature menopause, regain, to a considerable extent, their nervous equilibrium and might complete a very satisfactory life work. The day for the removal of ovaries on symptomatic grounds has passed, and the man who exhibits at society meetings, as has been done in the past, specimens of ovaries, which are vaguely classed as cystic or sclerotic, lays himself open to the severest condemnation. Dr. Clark believes that the gynecologists are greatly indebted to the neurologists for pointing out the radical difference between hysteria and neurasthenia. Gynecologists, as well as other surgeons, have been able to render a reciprocal service by demonstrating the value of operative treatment in the proper classes of neurasthenics.

DR. CHARLES P. NOBLE thinks that the majority of gynecologists believe that neurasthenia and hysteria exist not only independently of trouble in the pelvis, but concomitantly with it. He believes firmly in the existence of reflex disorders and has seen many cases of return to health after correction of some pelvic condition. With this one exception, he is in hearty accord with all the neurologists said on general principles. In his opinion, the gynecologist should deal with a patient with neurasthenia or hysteria associated with pelvic disease as he would deal with an insane patient presenting these disorders. If the pelvic condition threatens the patient's life, it should be corrected. It is then easier to solve the question of any remaining difficulty. In his experience there is no way in the city whereby a neurasthenic in poor circumstances can be treated by the rest cure. In the few places where they are admitted they receive no benefit in the general wards. Regarding the treatment of patients with nervous symptoms, Noble disproves of local treatment for functional symptoms without local lesions in young unmarried women. He believes that there are instances of lives being ruined by these young women becoming tied to physicians' offices and developing psychoses with regard to their sexual organs.

DR. WILLIAM E. ASHTON referred to true neurasthenia and to nervousness dependent on local lesions, and thinks that until the neurologist can positively differentiate between neurasthenia and neurasthenoid conditions it is unnecessary for him to consult with the surgeon. He thinks no neurologist is justified in placing such patients on rest-cures without knowing the condition of the pelvic organs. While he does not believe that a diseased pelvic organ produces essential neurasthenia, he holds that a large number of women not benefited by rest-cures are afterward permanently cured by operation for some gross pelvic lesion. He emphasized the fact that unless the actual condition of the pelvis is known the patient should not be treated by rest-cure. In neurasthenic or pseudoneurasthenic cases he believes that in the presence of gross pelvic lesions operation should be done for a cure, whether or not the neurologist is certain of the diagnosis. In operation for a cure, the operation should be carefully considered. He believes the removal of enlarged cystic ovaries in a neurasthenic woman is unwise. The resection of the diseased portion alone allows the possibility of pregnancy and the retention of menstruation.

DR. J. MADISON TAYLOR thinks that in the consultations of the gynecologist and the neurologist little would be left for the general practitioner to do. He thinks that in the cases showing arrested development good results will be secured unless opportunity is given for better development.

[illegible] salary so fixed [illegible] not to be interfered with, especially [illegible] has accepted it throughout the term as [illegible] in the case of Taylor vs. Adair County the fiscal court had provided a salary of $40 per annum to the health officer of the county. The Court of Appeals held that such a sum was inadequate and unreasonably small for the services rendered in that case. While it was there said that the fiscal court could not in advance fix the salary of the health officer, the expression was meant to convey the idea that generally it would be impracticable to attempt to do so, rather than that there was want of legal authority so to do. On the contrary, it was conceded that the power to fix the salary in advance not only existed, but that it was expedient that it be exercised in some just form. The city council, not the witnesses, are directed to fix the reasonable compensation for the services rendered. Before an allowance for such services, or the fixing of a salary for that office, not unreasonably small on its face will be set aside, it must clearly appear that the allowance or salary is unreasonable and inadequate. Not by a mere preponderance of testimony from those in the profession as to what is customarily charged for such services by physicians, but from all the circumstances and evidence, it should appear that there has been a palpable abuse of discretion, amounting to injustice, by the board or tribunal vested with the duty and power of fixing the compensation.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

January 27.

1 Problems in the Diagnosis and Treatment of Puerperal Infection. B. C. Hirst, Philadelphia.
2 *Intestinal Hemorrhage as a Fatal Complication in Amebic Dysentery and Its Association with Liver Abscess. R. P. Strong, Manila, P. I.
3 *Tropical Liver Abscess. J. M. Coffin, U. S. A.
4 *Cyst of Kidney Simulating Ovarian Cyst. W. Krusen, Philadelphia.
5 Treatment of Pulmonary Tuberculosis in Elmira, N. Y. H. D. Wey, Elmira, N. Y.
6 *Diphtheria Antitoxin Effective in Scarlatina. J. H. Lopez, Philadelphia.
7 Chronic Enlargement of the Tonsils as a Factor in Etiology. C. P. Nelson, Westbrook, Minn.

2. **Intestinal Hemorrhage Complicating Amebic Dysentery.**—Strong reports four cases in which the fatal termination was due to this complication. The fact that in all the cases large liver abscess coexisted shows, Strong thinks, that a close connection exists between intestinal hemorrhage and the hepatic condition. The idea that the destruction of such large amounts of liver tissue may sometimes bring about serious functional disturbances of this organ and lead to a condition which predisposes to hemorrhage must certainly be considered. While it is probable that more extensive observations will show that fatal intestinal hemorrhage in amebic dysentery may occur quite independently of liver abscess, the cases to which Strong refers seem t show that when hemorrhage occurs in cases complicated with such hepatic disease it is likely to be very severe and that the bleeding is likely to recur. It is possible, also, that the occurrence of multiple intestinal hemorrhages in amebic dysentery occasionally may be of some importance in the diagnosis of liver abscess.

3. **Tropical Liver Abscess.**—Coffin reviews the statistics of the dysentery cases which occurred in Manila from Jan. 1, 1902, to Aug. 31, 1905. There were 1,523 cases, classified as follows: Amebic, 859; catarrhal, 236; dysentery, acute or chronic, 428. Only thirty-four cases were complicated by liver abscess. The history of three cases is given in detail; these patients were operated on, with a mortality of 33.3 per cent. Coffin concludes as foll ws: 1. This condition should be known as hepatic amebiasis, the words "tropical" and "single" both being faulty in describing it; furthermore, it is not a true abscess as we understand t'e same. 2. The ameba coli, Lösch, is the exciting cause. 3. The routes of infection are the portal vein, over the peritoneum from the gut to the liver by ameboid motion, and through the common bile duct. 4. The leucocyte count is comparatively high and always a valuable guide in the diagnosis.

4. **Cyst of Kidney Simulating Ovarian Cyst.**—Krusen reports a case of simple serous cyst of the right kidney, which from the diagnostic standpoint resembled a cyst of the right ovary with a long pedicle. The cyst was retroperitoneal, and on incision a quantity of clear, colorless fluid was evacuated. The walls of the cyst were very thin and tense and of a transparent bluish color. On examination it was found to be connected with the right kidney, which was considerably atrophied. No odor of urine was detected.

6. **Diphtheria Antitoxin Effective in Scarlatina.**—Lopez states that in his experience early curative doses of diphtheria antitoxin administered in scarlatina abort the disease, curtail suffering and lessen the risk to the patient, one dose of 2,000 units being sufficient in the average case of sore throat due to bacterial infection to effect a speedy cure. He also finds the serum equally effective in all anginas, be they scarlatina, tonsillitis, quinsy, etc., through neutralizing the toxins and reducing the fever and local congestion which conaribute to the patient's suffering and the element of danger. There are no contraindications. Lopez says that it should be remembered that the largest quantities of serum the most severe cases may require, from 20,000 to 100,000 units, are not depressing to the heart, are not attended with any bad results or sequels and are without a single element of danger.

Medical Record, New York.

January 27.

8 Etiology, Prognosis and Treatment of General Paresis. J. Collins, New York.
9 *Therapeutic Value of Warm Moist Air and Hot Dry Air in the Treatment of Diseases of Children. T. W. Kilmer, New York.
10 *Pseudo-uremia of Childhood. W. H. Birchmore, New York.
11 *Mice and Pneumonia. E. Paller, New York.
12 *Obstetric Methods Practised in the Philippines. W. D. Bell, U. S. A.
13 Care of the Sick Outside of Institution. B. A. Rosenfeld, New York.

9. **Warm, Moist Air in Diseases of Children.**—Kilmer advocates the use of warm, moist air in the treatment of children suffering from croup, acute bronchitis, asthma, pneumonia, diphtheria, laryngitis, whooping-cough, tonsillitis, nephritis, sprains and acute articular rheumatism. The apparatus employed by Kilmer consists of a tin funnel chimney; a firepot, containing a Bunsen burner for gas and an alcohol lamp; a water boiler with a cover; a jointed tin tube in two sections with a gauze chamber, and an asbestos tube. It is impossible, says Kilmer, to upset this apparatus. It can be kept going for weeks, if necessary, with no attention save the occasional addition of water. The firepot may be turned upside down and the burner will not drop out. The apparatus may be carried from place to place while lighted, with no danger of setting fire to the house, scalding the patient or burning the hands. The method of using this apparatus for supplying warm vapor or hot, dry air is described in detail.

10. **Pseudo-Uremia of Childhood.**—According to Birchmore, this disease is rare and its symptoms misleading. In those cases which came under his immediate notice the diagnosis of uremia had been made by skillful physicians. All the cases began with headache and chill in the older patients, with spasms and crying fits in the younger ones, followed by a sleep or lethargy sufficiently alarming to require the attendance of a physician. The skin was dusky or bluish in tinge. The pulse averaged 59, with a temperature of 102.4 and 103.2. In all the cases the pupils were much contracted. A hypodermic injection of sulphate of atropin to stimulate the respiratory center was at once given, and one of strophanthin, in preference to digitalis, to steady the heart. The breathing improved as soon as the atropin began to take effect. When

downward, could be grasped at the angle and easily extracted. A tracheotomy tube was then inserted. The signs in the chest disappeared within two days, the temperature and pulse fell to normal, the tracheotomy tube was removed at the expiration of one week and the wound healed up rapidly.

38. **Elevator, Speculum and Forceps for Use in Submucous Resection.**—Hurd's elevator is a double-ended instrument, the sharp end resembling a Volkmann curette, except that the cavity of the spoon is filled with metal, the other end made of copper, blunt and rounded. The flexibility of the copper allows this blunt end to be bent in any way desired. The speculum is to be used after the cartilage has been removed with a Ballenger swivel-knife. The long blade is passed between the membranes and the instrument is held with the left hand, with the long blade uppermost at all times. The down-cutting forceps is intended for use on the anterior nasal spine of the superior maxilla and on the vomer after the cartilage and bone have been removed from above. Hurd says that the advantages of this forceps are that no assistant is required; it will never injure the mucous membrane, as the chisel is liable to do; it keeps the parts well in view and secures a much smoother edge than that obtained by the chisel.

39. **A New Tonsil Tenaculum.**—The points of advantage claimed for this instrument by its originator, Bryant, are (a) simplicity of construction, (b) shortest possible time consumed in adjusting and releasing, (c) non-obscuring of field of vision, (d) leaving operator free to use both hands, (e) adaptation for right or left tonsil, (f) avoidance of injury to patient. The tenaculum is worked by a strong wheel-bearing spring, constant and uniform in action. The tonsil is held by three prongs, two of which seize it at the base, and the third comes in between the two at the apex, giving a secure hold, especially helpful in friable tonsils. The distal arms are locked beyond the range of the uvula and are separated on approximation by a steel block, thus preventin injury to that structure. Neither the wire nor canula of the tonsil-snare can interfere with the hinge of the tenaculum by slipping in between the arms at an inopportune moment. The horizontal convex curve of the shorter arms and the shape and size of the handles leave the line of vision and field of operation unobstructed, which is desirable in those operations requiring the use of the snare. The upper handle is shorter than the lower straight handle and terminates in an open curved projection, on which the thumb rests, assisting in guiding the instrument. The slightest pressure on the handles adjusts or releases the tenaculum. Its length is 21.5 cm.; weight, 113.40 grams.

Annals of Ophthalmology, St. Louis, Mo.

October.

40 Eyestrain Origin of Epilepsy. G. M. Gould, Philadelphia.
41 Treatment of Convergent Squint in Young Children. L. Emerson, Orange, N. J.
42 *Surgical Treatment of Ptosis. J. J. Thomson, New York.
43 Operation for Sympathetic Soft Cataract, with Remarks on Sympathetic Ophthalmia. J. Hirschberg, Berlin.
44 Glioma Retinæ. F. Krauss and H. G. Goldberg, Philadelphia.
45 *Pathogenesis of Spasmus Nutans. A. Schapringer.
46 Excision of the Superior Cervical Ganglion in Inflammatory Glaucoma. M. L. Foster, New York.
47 Operation for the Relief of Cicatricial Orbit. J. M. Ball, St. Louis.
48 Pigment Spots in the Cornea. L. Steiner, Soerabaya, Java.
49 Hydrophthalmos, Glaucoma and Iridectomy. Schoen, Leipsic.

42. **Surgical Treatment of Ptosis.**—The technic by which Thomson has obtained the best results is as follows: After making an incision through the skin following the upper border of the tarsal cartilage, and extending completely from one end of it to the other, the skin should be completely separated from the underlying orbicularis as low as the ciliary margin and as high as the orbital arch. This extensive dissection is necessary in order to give room and freedom for the subsequent steps of the operation. Two vertical incisions are then made through the orbicularis muscle, one on either side of the tendon of the levator, right down to the tarsal cartilage below and as deep as the conjunctiva above it. The portion of the orbicularis between these incisions, together with the tendon of the levator, is separated from the conjunctiva as far back as possible. When the dissection is carried upward about three-quarters of an inch, the cellular space between the orbicularis, where it passes to the orbital margin, and the levator, where it dips into the orbit, is readily found, and, working downward from here, the two planes of muscle are easily separated and the redundancy in the orbicularis is cut out. The tendon of the levator is then seized with a forceps to prevent it from slipping back into the orbit, and its attachment to the cartilage is cut. As much of the muscle as is deemed necessary is excised; this amount, of course, varies according to the degree of ptosis present. Ordinarily between 1½ and 3 mm. should be removed. Three mattress sutures are then inserted into the tendon, one in the center and one near each margin, and the other end of the stitches passed into the cartilage near its ciliary margin. Care is required to get the center stitch placed properly and the lateral sutures equally distant from it. The reason for using mattress sutures is to overcome any tendency the stitches may have to cut out. Silk is the best suture material. It is not necessary to bring the edges of the wound in the orbicularis together, because, owing to the shortening of the levator, they naturally fall in apposition. Thomson thinks it is well to remove a narrow strip of skin before bringing the cutaneous margins together, as otherwise there will be a fullness over the lid for some days. A dry dressing and a bandage are applied; the wound should be dressed daily. No disfigurement results from this operation.

45. **Pathogenesis of Spasmus Nutans.**—Schapringer explains the appearance of unilateral nystagmus in spasmus nutans as follows: In early life it easily happens that one of two physically equal retinal images is not perceived and is disregarded by the mind, as is clearly shown in the typical strabismus convergens which appears in childhood. In those children in whom favorable internal and external conditions for the genesis of spasmus nutans are present, it often happens that the central perception apparatus, the mind, directs its attention on the retinal image of only one eye—for example, the left—and disregards that of the right. In consequence of this the impulses of labile eccentric fixation which go out from the center pass only to the left eye. In the age of life under consideration the law of equivalent motor innervation of the eyes does not possess its full force, and a unilateral nystagmus can appear, either in the form that only the left eye oscillates or that this eye oscillates more than the other. Therefore, when unilateral nystagmus accompanies spasmus nutans, the eye which oscillates alone or most perceptibly is to be considered as the "fixing eye," as that one whose retinal image is perceived and mentalized. In spasmus nutans, in addition to the nystagmus there occasionally appears a transitory strabismus, due to a spasm of a rectus or oblique muscle. This muscular spasm is to be regarded as a "confident movement" in no way contrary to the rule.

Bulletin of Johns Hopkins University, Baltimore.

January.

50 Dr. Garth: the Kit-Kat Poet. H. Cushing, Baltimore.
51 Relationship of the State to the Tuberculosis Question. J. P. C. Foster, New Haven, Conn.
52 *X-Ray Diagnosis of Thoracic Aneurism. F. H. Baetjer, Baltimore.
53 Method of Estimating the Opsonic Content of Blood and Other Fluids. C. E. Simon and R. V. Lamar, Baltimore.
54 *Tropical Splenomegaly. W. E. Musgrave, W. B. Wherry and P. G. Woolley, Manila, P. I.

52. See abstract in THE JOURNAL, Oct. 28, 1905, page 1355.

54. **Tropical Splenomegaly.**—According to the authors, a clinical summary of this symptom complex, as it occurs in the Philippine Islands, shows that it is very closely related to, if not identical with, those forms occurring in other tropical countries, where it is variously known as kala-azar, dum-dum fever, etc. Young people from 15 to 25 years of age seem to be susceptible. The disease is almost invariably ushered in by an attack of remittent or intermittent fever, which clinically resembles malaria or dengue, and is accompanied by enlargement of the spleen. Recurrent exacerbations of fever at irregular intervals occur throughout the course of the disease. This fever is not influenced by quinin, and in the Philippines is recognized by the natives as a "cayana" or "quisig," and is held by them to be a disease distinct from malaria. The laity consider the disease a very fatal one and often of very short duration, but more often chronic, the patient living for several or many years. The spleen usually enlarges quite rapidly, reach-

ing its maximum size in the second or third attack of fever, and then very often no further change occurs, unless the idea of the natives that the organ grows harder is correct. The liver may or may not be enlarged, but when it is that change is secondary to the splenic enlargement. Jaundice, usually slight, but also well developed, is often present, sometimes even in those cases without enlargement of the liver. This fact accounts partly for the muddy, pigmented appearance of the skin and mucous membranes which is so commonly seen. There seems to be a special tendency to involvement of the mucous membranes in this disease. This is shown by the frequent gastrointestinal disturbances, conjunctivitis, etc. The natives say that this disease causes discharges from the vagina and sometimes also abortion. There is also a tendency to hemorrhages in both the mucous membranes and the skin. This tendency may be explained in some cases by the jaundice. Edemas, at first transient and later more marked and persistent, are common occurrences and are more common on the legs and face. Ascites and pulmonary congestion may also be marked. Anemia, emaciation and cachexia gradually develop in nearly all cases. Pain is a frequent but by no means a constant symptom. It is manifested by headache, arthralgia and myalgia, and apparently is more common in the early stages of the disease.

Oklahoma Medical News-Journal, Oklahoma City.

January.

55 *Practical Points in Appendicitis. J. C. Morfit, St. Louis, Mo.
56 The Doctor and the Dollar. T. A. Stevens, Caney, Kansas.
57 Prayers Can Not Err. R. V. Pearce, Howard, Kan.

55. **Appendicitis.**—Morfit urges that every patient with an inflamed appendix should be operated on and the irritating or irritated appendix removed, even if not inflamed. There are times, he says, when operation might be deferred, but never abandoned, to advantage. The diagnosis should be made and operation decided on or not in the first six hours after seeing the patient. If twelve or twenty-four hours elapse after the onset of the attack the time of operation is open to discussion. Even in advanced stages, deferring operation to a more opportune time is so fraught with dangerous uncertainties as to make operative measures equally as promising as non-operative. Taking the cases as they come in all stages, the hundred operative cases will give a more flattering recovery and cure percentage than the hundred treated medically. Morfit claims that it is not faulty operative technic, but procrastinating diagnostic technic, that is responsible for most of the mortality.

Journal of Michigan State Medical Society, Detroit.

January.

58 Gangrene of the Scrotum. A. W. Hornbogen, Marquette.
59 Uses and Abuses of the Obstetric Forceps. J. J. Mulheron, Detroit.
60 *Treatment of Chronic Constipation. J. A. MacMillan, Detroit.
61 A Few Results of Roentgen-Ray Therapy. C. George, Jr., Ann Arbor.
62 Clinical Hydrotherapy. T. Sigel, Detroit.
63 Analysis of 105 Consecutive Cases of Typhoid Fever in Reference to Diagnosis and Treatment with Special Mention of Interesting Cases. R. S. Rowland, Detroit.
64 Why Surgical Fixation of a Movable Kidney Will Not Relieve Dyspeptic and Nervous Symptoms. C. D. Aaron, Detroit.
65 Indigestion in Infants the Most Frequent Cause of Summer Diarrheas. C. Douglas, Detroit.

60. **Treatment of Chronic Constipation.**—MacMillan experimented on dogs to observe the effects of different agents on peristalsis. To determine the effect of distention on the colon, the dog was anesthetized with chloroform and the abdominal viscera well exposed by long longitudinal and transverse incisions. The colon was immersed in normal saline solution at about 100 F. A collapsed thin-rubber bag was then inserted through the anus and made to rest in the rectum or colon. This bag had a tube attached for the purpose of inflation. By these means any degree of distention of the rectum or colon can be obtained readily. The presence of the uninflated bag in the bowel produced no contraction. Moderate distention was followed, after a length of time, varying in different dogs and in different parts of the bowel, by waves of contraction. Usually the contraction was seen to begin immediately above the bag, but occasionally it was first seen at some distance. As distention was increased the peristaltic contractions followed more rapidly, and wave after wave propelled the bag along. These contractions continued, even after the distention had ruptured the bowel. In most cases strong contractions of the abdominal muscles accompanied the peristalsis when it had reached a certain strength. MacMillan concludes that these experiments demonstrate that distention of the bowel induces normal effective peristalsis.

New Orleans Medical and Surgical Journal.

January.

66 *Simple Bandage for Fractured Clavicle, Particularly in Children. B. A. Colomb, Union, La.
67 Case of Esophageal Stenosis. J. T. Halsey, New Orleans.
68 Case of Acute Tetanus. P. E. Bechet, New Orleans.
69 Amputation of the Cervix Uteri for Hemorrhage Complicating Chronic Metritis. C. J. Miller, New Orleans.
70 Preventive Medicine. O. Kohnke, New Orleans.
71 Necessity for National Quarantine. E. P. Lowe, New Orleans.
72 A Lymphoid Tumor of the Larynx Removed by Partial Laryngectomy. G. King, New Orleans.
73 Voluminous Papilloma of the Nasal Cavity. G. King, New Orleans.
74 Abuses Arising from Thoughtlessly Issuing Certificates of Accident to Injured Parties, etc. E. D. Martin, New Orleans.
75 Prevalence and Diagnosis of Yellow Fever in the Colored Race. C. M. Brady, New Orleans.
76 Diagnosis of Mild Yellow Fever and Some of Its Difficulties. Id.
77 State Quarantine. A. Nolte, New Orleans.
78 Case of Uncinariasis. C. C. Bass, New Orleans.
79 Three Cases of Intussusception. J. M. Batchelor, New Orleans.
80 Primary Nasal Diphtheria. H. Dupuy, New Orleans.

66. **Simple Bandage for Fractured Clavicle.**—The bandage employed by Colomb is made from one piece of stout cloth, three yards long, for a child and from two and one-half to three inches wide. Enough of the bandage is folded over at one end to extend the full length of the forearm. This is sewed along the bottom, the lapel end and greater portion of the top, leaving an opening into which the band and arm can be passed easily. Once the arm is inside the sleeve, a safety-pin closes the opening more snugly around the arm, so as to prevent its removal. A few safety-pins where the folds cross make the bandage secure.

Southern California Practitioner, Los Angeles.

December.

81 Further Data on the Chest-Index in Tuberculosis. W. Hutchinson, Redlands, Cal.
82 Syphilis, Extra-Genital Chancres. R. Williams, Los Angeles.
83 Visit to the Barlow Sanatorium. A Los Angeles Institution for the Treatment of Pulmonary Tuberculosis. G. H. Kress, Los Angeles.
84 Pleuro-Pneumonia or the Tonopah Plague. G. L. Hogan, Los Angeles.
85 Quacks and Quackery, and Patients and Proprietaries from a Hygienic View Point. J. P. Booth, Los Angeles.
86 Finsen Light Treatment. A. Soiland, Los Angeles.
87 Etiology and Pathology of Nephritis. D. Fulton, Los Angeles.

Medical Fortnightly, St. Louis.

December 25.

88 Malaria. J. P. Stewart, Attalla, Ala.
89 Technic of Surgical Nursing. J. A. Day, Jacksonville, Ill.
90 Epilepsy. J. W. Selman, Greenfield, Ind.

Canadian Journal of Medicine and Surgery, Toronto.

December.

91 Growth and Organization of the Medical Profession in Nova Scotia. D. A. Campbell, Halifax.
92 Tongue-like Accessory Lobes of the Liver and Achylia Gastrica. J. Newell, Watford, Ontario.

International Journal of Surgery, New York.

December.

93 Conservative Treatment of the Enlarged Prostate. H. M. Christian, Philadelphia.
94 Immediate Detection of Injuries to the Birth Canal Resulting from Childbirth. J. E. Davis, Detroit, Mich.
95 Imperative Treatment of Urinary Retention. J. B. Bissell, New York.
96 Observations on Appendicitis. L. Sexton, New Orleans, La.
97 Treatment of Transverse Presentations. J. R. Hicks, Washington, D. C.

Ophthalmic Record, Chicago.

December.

98 Ocular Injuries. M. Black, Denver.
99 New Model Chalazion Forceps. L. M. Francis, Buffalo.
100 Case of Almost Fatal Poisoning by Homatropin Instilled into the Eyes. F. C. Hotz, Chicago.
101 Influence of the Size of the Pupil in Skiascopy and a Pupil Stop. E. Jackson, Denver.
102 New Advancement Forceps. M. D. Stevenson, Akron, Ohio.

Archives of Pediatrics, New York.

December.

103 Pathology of Congenital Laryngeal Stridor. H. Koplik, New York.
104 Case of Acute Leukemia. A. D. Blackader and B. D. Gillies, Montreal

105 Case of Acute Aleukemic Leukemia in a Boy Two and One-half Years Old. A. Hand, Jr., Philadelphia.
106 Fat Indigestion from a Mother's Milk. W. P. Northrup, New York.
107 Temperature, Pulse and Respiration Relationships in Infancy and Childhood. M. S. Cohen, Philadelphia.

New York State Journal of Medicine.

December.

108 History of the Dispensary Law. E. E. Harris, New York.
109 Practical Application of the Law to the Dispensaries. W. B. Buck, New York.
110 Experience of the Special Inspector of Dispensaries. J. B. Prest, New York.
111 Practical Value of the Investigation of Dispensary Cases. E. T. Divine, New York.
112 Question of Medical Clinics in Relation to the Dispensary Law. J. A. Wyeth, New York.
113 Typhoid Fever in Children. L. C. Ager, Brooklyn.
114 Case of Rarefying Osteitis. E. S. McSweeney, New York.

Western Medical Review, Lincoln, Neb.

December.

115 Adrenalin Chlorid as an Adjunct to Cocain in Local Anesthesia. C. Davis, Lincoln.
116 Diagnosis of Diabetes, with Special Reference to the Preglycosuric Stage. G. H. Brash, Beatrice.
117 Physiopathologic Considerations in Regard to Diabetes Mellitus. I. N. Pickett, Odell, Neb.
118 Nervous Phenomena of Diabetes. C. P. Fall, Beatrice.
119 Ocular Complications of Diabetes. J. M'Glrr, Beatrice.
120 Dietetic Treatment of Diabetes Mellitus. C. A. Love, Beatrice.
121 Precautions a Surgeon Should Take Before Operating on Diabetic Subjects. H. M. Hepperlen, Beatrice.
122 Cysts of Anterior Mediastinum. A. P. Condon, Omaha.

Medical Examiner and Practitioner, New York.

December.

* 123 Evidence Yielded by the Statistics of the Middlesex Hospital on the Question of an Increase of Cancer. W. S. L. Barlow and G. Taylor, London.
124 Cancer as a Cause of Death in Assured Lives. R. H. Fox, London.
125 Vagus Reflex as a Diagnostic Sign. T. J. Mays, Philadelphia.
126 Women as Risks. T. H. Bradford, Philadelphia.
127 Insurability of Females. W. M. Hilton, Waverly, N. Y.
128 Heredity, Its Consideration in Relation to Risks in Life Insurance. W. M. Hilton, Waverly, N. Y.
129 To What Extent Should Insurance Organizations Educate Their Insured as to Healthful Living. E. S. Sherrill, Detroit, Mich.

Indiana Medical Journal, Indianapolis.

December.

130 Accessory Sinuses of the Skull, with a Brief Reference to Diseases of the Same. J. J. Kyle, Indianapolis.
131 Lessons for America in the Japanese Army Medical Service. L. L. Seaman.
132 Sanitation of Japan's Navy. S. Suzuki.
133 Microscope in Diagnosis. M. Knowlton, Terre Haute.

Vermont Medical Monthly, Burlington.

December.

134 Iniencephalus. M. S. Abbott and F. A. L. Lockhart, McGill.
135 Retrospection and Introspection. D. D. Grant, Waterbury, Vt.
136 Need of Sanatoria Treatment for the Consumptive Poor. E. G. Roberts, Fair Haven, Vt.

Journal of Minnesota State Medical Association and Northwestern Lancet, Minneapolis.

December 15.

137 Use of Instruments of Precision in the Diagnosis of Unilateral Disease of the Kidney and Ureter. A. W. Abbott, Minneapolis.
138 Urticaria. M. A. Desmold, Eagle Bend, Minn.
139 Present Status of Sympathectomy. H. La Motte, Salt Lake City, Utah.

Journal South Carolina Medical Association, Charleston.

December.

140 Facts Favoring Early Removal of Fibromyomata of the Uterus. L. Peters, Columbia.
141 The Wearing of Glasses. S. H. Griffith, Gaffney, S. C.
142 Thorough Organization a Necessity for the Medical Profession. C. W. Kollock, Charleston.
143 Gallstones. Le G. Guerry, Columbia.

Buffalo Medical Journal.

December.

144 Traction as Applied to Tuberculous Joint Conditions. P. Le Breton, Buffalo, N. Y.
145 Diagnostic Value of Examination of the Blood. W. A. Cowell, Olean, N. Y.
146 Masturbation in the Young Girl the Cause of Acquired Sexual Perversion. W. L. Howard, Baltimore.

Louisville Monthly Journal of Medicine and Surgery.

December.

147 Hematemesis Following Labor; Impaction of Bowel Simulating Appendicitis; Tapeworm. T. H. Stucky, Louisville.
148 Causation of Disease. J. Glahn, Owensboro, Ky.
149 Extrauterine Pregnancy; Typhoid Following Operation. Ap M. Vance, Louisville.
150 Thoracic Aneurism. J. A. Ouchterlony, Louisville.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

January 13.

1 Unusual Manifestations of Syphilis in the Upper Air Passages. F. Semon.
2 *Reality of Enterospasm and Its Mimicry of Appendicitis. H. P. Hawkins.
3 Pelvic Appendicitis and the Importance of Rectal Examination. G. E. Armstrong.
4 Diffuse Peritonitis from Perforation of the Appendix. C. A. Morton.
5 Functions of the Omentum. R. Morison.
6 Précis of the Conditions Under which Lunatics are Received in Continental Asylums. M. Wyler.

2. **Enterospasm and Appendicitis.**—Hawkins believes that there are patients whose symptoms are the same after as before an appendicectomy. The appendix being blamed unnecessarily for the existence of the condition for which the operation was performed. He is convinced that this condition is the result of enterospasm and cites a number of cases in support of his theory. The patient suffered from pain of a dull character, and often only from discomfort which becomes exceedingly intolerable after a spell of some weeks or months. The discomfort is relieved by satisfactory action of the bowels, but such an action is difficult to get, and strong, irritating purgatives aggravate it. The stools are commonly narrowed into pencils or ribbons. Pressure or massage will sometimes give relief in the slighter cases, and the hot bath may have a great effect. During the attack there is no desire to go to stool. There is a feeling of discomfort and tightness in the left iliac fossa, and the rectum is empty and thrown into folds, often with spasm of the sphincter. In the worst cases nausea is felt occasionally, but there is seldom any vomiting. In nearly all these cases some part of the colon, more commonly the descending portion, can be felt as a hard cord about the size of a man's forefinger. The bowel above the spastic part does not become dilated. No peristalsis is seen or felt, and the abdomen is seldom distended. Hawkins concludes that owing to the absence of all evidence of organic disease and the long duration of some of his cases, it is exceedingly unlikely that there is any structural change in the intestine or elsewhere, and that these patients are either neurotic or neurasthenic, the abdominal trouble varying directly with the mental state.

The Lancet, London.

January 13.

7 Aphasia. B. Bramwell.
8 *A. E Wright's Method of Treating Tuberculosis. W. W. Cheyne.
9 A Medley of Surgery. E. E. Goldmann.
10 Pathology and Bacteriology of Serous and Purulent Pleural Effusions in Children. J. G Emanuel.
11 Case of Poisoning by Nitro-Benzol. A. H. H. Vizard.
12 Strangulation of an Infantile Umbilical Hernia. P. Turner.
13 *Two Cases Illustrating Sciatica of Abdominal Origin; Laparotomy. F. W. Forbes-Ross.

8. **Tuberculin in Tuberculosis.**—Speaking of the accuracy of the opsonic index, Cheyne says that he believes that the result of the examination of the blood depends a good deal on the personal equation, and that it has not the strict mathematical accuracy that one could desire. Another difficulty is the cumbersomeness of the method which makes it impracticable for the busy physician. Cheyne has employed Wright's method in several cases of bone and joint tuberculosis and of genito-urinary tuberculosis, but failed to obtain the expected satisfactory results. His view as regards the position of tuberculin in the treatment of tuberculosis is that it is a most valuable adjunct to the treatment now in vogue, but he is not prepared to abandon surgical measures when these are necessary. In circumstances in which no operation formerly or now would have been considered necessary, tuberculin should be used in conjunction with the other methods employed.

13. **Sciatica of Abdominal Origin.**—Forbes-Ross cites two cases in which the cause of the sciatica was only recognized when other subsequent, independent and direct symptoms drew attention to, and caused the sufferers to seek advice for, a condition of affairs existing within the abdominal cavity which had not hitherto been suspected as giving rise to the nervous affections. The first case was illustrative of what Forbes-Ross calls the true censory physiologic reflex, nervous response

of one spinal segment to peripheral irritation existing in the area supplied by another adjacent spinal segment. The second case was a type of the usual pressure symptom case of pressure on both sciatic nerves caused by extensive adhesions of the pelvic organs. In the first case there was found a small, exceedingly tense, central cystic tumor of the left ovary about the size of a small orange. This tumor was removed and there has been no recurrence of the sciatica.

Journal of Tropical Medicine, London.

January 1.

14 *Is Yaws Syphilis? A. Castellani.
15 A Simple and Cheap Rocker for Leishman or Other Stains. P. N. Gerrard.

14. Is Yaws Syphilis?—Castellani reviews the clinical history of yaws and concludes that the symptoms, distribution and pathology of this affection show many points of difference from syphilis, and that the presence of a spirochete of the pallida type is not sufficient evidence to prove that yaws and syphilis are identical. He believes that though they may be closely allied, they are two different diseases.

The Practitioner, London.

January.

16 Convulsions in Typhoid Fever. W. Osler.
17 Treatment of Uric Acid. J. F. Goodhart.
18 Solubility, as Applied to Urine; Theory of Gout—A Protest. W. G. Smith.
19 *Physiologic Action of Tea as a Beverage. L. Brunton.
20 Present Position of Dietetics. R. Hutchison.
21 Use and Misuse of Tuberculin. A. B. Harris.
22 Tropical Diseases. R. T. Hewlett.
23 Edema of the Face. A. R. Short.

19. Action of Tea.—According to Brunton, tea may interfere with nutrition in three ways: First, by lessening the feeling of hunger; second, by rendering food less digestible, and third, by interfering with the digestive power of the stomach. At the same time that it thus lessens the nutrition of the body it enables the person to use up much more energy than he or she would be able to do without its aid, and the consequences of this are most evident in the effect on the nervous system. Although tea prevents the sensation of fatigue from being felt for a while, yet exhaustion is going on, both in mind and body, and this usually at length causes disinclination to either mental or bodily exertion, and tends to destroy the power of doing any useful work, either mental or physical, even when the attempt is made. Power of self-restraint is diminished and the person becomes nervous, unduly sensitive, timid and emotional. Not unfrequently ringing in the ears is felt, giddiness, headache, sometimes very severe neuralgia and tremulousness. The tremors seem to be more readily induced by green tea than by black tea, and Brunton has known of one case in which two or three cups of green tea were sufficient to induce marked tremor. Neuralgia is very apt to occur in nervous people who are able ordinarily to take a great deal out of themselves, either by sheer force of will or under excitement, and are thus more liable to reduce themselves below normal than those of more lymphatic temperament. Neuralgia has been described as the prayer of a nerve for better blood and more of it, and tea, by enabling these people to take even more out of themselves than they otherwise could, will render their neuralgia more severe and more continuous. It is evident that a similar result is to be expected in regard to other nervous functions, and that the stability of the brain may be so seriously impaired that the combination of starvation and stimulation, produced by excessive tea drinking, will certainly produce a tendency to mental derangement, even if it does not actually determine its onset. In addition to its action on the nervous system, however, tea is a powerful stimulant to the circulation, and, if abused, will lead to feebleness of the pulse and to palpitation. All teas are not equally injurious. Ceylon and Indian tea are preferred by many people to China tea on account of their aroma and stimulating qualities, and, so long as they are taken in moderation and prepared in the right way by simple infusing for two or three minutes, and then pouring the water off from the leaves, they will suit healthy people very well. Whether on account of the higher proportion of tannin they contain, or some other reason which we do not yet know, they are not so good for weak digestions as China tea, which, especially if it is prepared in the way just recommended, by infusion for two or three minutes only, is less likely to cause dyspepsia than other kinds of tea. The physiologic action of tea is usually attributed almost entirely to the alkaloid, theine or caffein, which it contains, but Brunton does not think that this can be the case because green tea, which contains no more of the alkaloid than black tea, has a much more powerful effect on the nervous system, an effect which can not be explained by the somewhat larger proportion of tannin, and must, he thinks, be due to some other constituents in the leaf. Green tea and black tea are not obtained, as many people suppose, from different varieties of the plant, but only differ in their method of preparation; the leaves which form the green tea being roasted in a pan shortly after they are plucked, while those that form the black tea are allowed to undergo a form of fermentation before roasting. Brunton sums up his paper as follows: Tea when properly prepared, and taken in moderation, is both useful and agreeable. When taken in too great quantity, or along with meat, when too strong when infused too long, or still more when boiled or stewed, it is apt to produce digestive troubles. When taken in excess it may produce nervous symptoms of the most serious character, and facilitate, if it does not actually produce, mental degeneration.

Bulletin de l'Acad. de Médecine, Paris.

24 (Year LXX, No. 1.) *Etude du tetanos dit médical ou spontané. Influence de la chaleur (of heat). Vincent.

24. Atmospheric Influences in Tetanus.—Vincent announced in 1891 that the microbe of tetanus does not flourish in the living organism unless it encounters special conditions which favor its proliferation, such as the action of chemical or microbian toxins, mechanical changes in the tissues, hemorrhage, etc. He now announces that exposure to heat is one of the most potent influences that can favor the proliferation of the germs of tetanus. A young man succumbed to acute tetanus, but nothing could be discovered to explain the origin of the infection. There were no bruises or history of any accident. It was learned, however, that about a week before the first symptoms the young man had suffered a heat stroke after prolonged exposure to the sun. Vincent assumed that this heating of the body had been the condition which enabled the tetanus germs to proliferate, and experiments with animals confirmed this view. Guinea-pigs injected with a small amount of tetanus cultures did not exhibit any symptoms unless the animals were placed in the incubator at a temperature of 104 F. They were removed from the incubator when their temperature reached 107. In a few hours the temperature had returned to normal, but two or three days later, while the controls were and remained healthy, the animals which had been subjected to heat developed symptoms of tetanus and died with symptoms suggesting tetanus affecting principally the viscera. The exposure to heat was followed by the development of tetanus, even when an interval of from thirty to sixty days had elapsed after the infection and before the exposure. The virulence of the germs could not have been enhanced by the comparatively low temperature of 104. The results observed must have been due to the lowering of the resisting powers by the action of the heat. To confirm this theory he exposed to the heat a number of normal guinea-pigs and studied the effect of the exposures on the leucocytes. As soon as the temperature rose to 107 pronounced leucolysis was always observed, affecting principally the cells most actively engaged in phagocytosis. The changes observed in the phagocytes readily explain the lowered resisting power of the organism and the way in which the tetanus germs proliferate unmolested. The germs multiply rapidly and spread throughout the organism, inducing fulminating symptoms of splanchnic tetanus. The germs may remain absolutely latent and quiescent in the system until allowed to proliferate by the lowering of the resisting powers. The period of incubation in such a case dates only from the moment when the germs began to develop unchecked, not from the time when the germs gained entrance to the body. In discussing Vincent's paper Kelsch remarked that the idea that exposure to heat is able to favor the proliferation of germs in the body may possibly explain why typhoid, dysentery, etc., are more severe in the tropics, and also why France suffers more from typhoid fever than the countries of Europe farther north.

Semaine Médicale, Paris.

25 (XXVI, No. 1.) *Spirilles, spirochètes et autres micro-organismes à corps spiralé. R. Blanchard.

25. **Micro-organisms with Spirally Twisted Bodies.**—Blanchard's article is a historical sketch and description of the various forms of spirobacteria and of the trypanosomidæ. The spirobacteria include the genus spirosoma, the genus vibrio and also the spirobacillus and the spirillum. He describes about two dozen varieties of the latter. The trypanosomidæ include the genus spirochæta, of which he describes twenty-one species; the Schaudinn genus treponema (hitherto called the *Spirochæta pallida* of syphilis), the genus trypanosoma and the genus trypanoplasma. Comparative study of these various micro-organisms shows the vast differences between the spirobacteria and the protozoan trypanosomidæ, and also shows how members of both groups are able to adapt themselves to the special conditions of life as a parasite. It shows also the degrees of virulence and the varied rôles they play in human and comparative pathology, and points the way to new fields of research in the field of parasitology.

29. **Comparison of the Clinical and Pathologic Anatomic Findings in Cancer.**—Pankow found cancerous glands in 38.2 per cent. of the cancer material at his disposal, which included three corpus and sixty-seven cervix carcinomas, all just removed. The ureter was involved in only one case, and then to a very slight extent. It seems able to resist cancerous encroachment. The bladder is also quite resistant. His findings compel him to advocate the necessity for extensive resection of the parametrium in ablation of uterine cancer. The abdominal route is the only one to be considered in such cases. The surgeon should not hesitate, Parker says, to implant both ureters in the bladder, if necessary. In three such cases, with impending uremia, great benefit was derived from resection and implantation of both ureters in the bladder.

Archiv f. Gynäkologie, Berlin.

Last indexed XLV, page 1368.

26 (LXXVI, No. 2.) Ueber Neubildungen am Genitale bei Zwittern, nebst Beiträgen zur Lehre von den Adenomen des Hodens und Eierstockes (new growths on genitals of hermaphrodites). L. Pick.

27 *Physiologische Versuche an der Gebärmutter in vivo, ihre Vergleichung mit den Versuchen an dem isolierten Organe und einige allgemeine Ergebnisse (study of living and isolated uterus). E. M. Kurdinowsky.

28 Experimente zur Frage ueber den Einfluss der Asphyxie und der Anämie auf die Uterus-Contractionen. Id.

29 Vergleich der klinischen und pathologische-anatomischen Untersuchungsbefunde beim Carcinoma uteri und ihre Bedeutung für die Therapie. Pankow.

30 Ueber die Einbettung des menschlichen Eies, studiert an einem kleinen Ei der zweiten Woche. (Study of Implantation of Ovum, Second Week). T. R. Doria.

Beiträge zur klin. Chirurgie, Tübingen.

Last indexed XLV, page 1765.

31 (XLVI, No. 2.) *Operative Behandlung von Zwerchfellwunden (wounds of diaphragm). F. A. Suter.

32 Plastics of Large Defects in Skin of Penis, Scrotum or Foot.—Plastische Deckung grosser Hautdefekte am Penis und Skrotum (sog. Schindung), sowie am Fuss. M. Brod.

33 *Postoperative Ileus in connection with Acute Dilatation of Stomach.—Ueber postoperativen arteriomesenterialen Darmverschluss an der Duodeno-jejunal-Grenze und seinen Zusammenhang mit akuter Magen-Dilatation. H. Zade.

34 *Surgery of Thoracic Part of Esophagus.—Chirurgie des Brustteils der Speiseröhre. F. Sauerbruch.

35 Unterbildung der Vena jugularis interna (ligation). M. Dangel.

36 Entstehung der Langsfraktur der Fibula (cause of longitudinal fracture of the fibula). A. Wittek.

37 *Prinzipien der Peritonitis-Behandlung. W. Nötzel.

38 Behandlung der Patella-Frakturen an Wölfler's Klinik. G. Doberauer.

31. **Injuries of the Diaphragm.**—Suter reports the operative cure of two patients with severe injury of the diaphragm, one requiring also nephrectomy. He has found records of sixty-one cases of stab wounds of the diaphragm in which an operation was attempted and four of bullet wounds. More than 73 per cent. of the patients were treated by a transpleural operation, with permanent or temporary resection of ribs, the mortality being only 5.6 per cent. The mortality in the twelve cases requiring laparotomy was more than 3.5 per cent., while it was 25 per cent in the cases complicated by injury of other organs.

33. **Gastromesenteric Ileus.**—Zade applies this term to the ileus due to obstruction from acute dilatation of the stomach superposed on chronic dilatation. More or less complete mesenteric ileus is liable to follow this combination, possibly favored further by relaxation of the abdominal walls or by unusual length of the mesentery.

34. **Surgery of the Thoracic Part of the Esophagus.**—At the Breslau clinic a special study has been made of the thorax and of the possibilities of surgical intervention since the invention of Sauerbruch's air-chamber for operating under minus pressure. Fourteen patients have been operated on by this technic and the results fully confirm its feasibility. These operations show that the thorax can be opened wide in the air-chamber without disturbing the respiration or heart action, and further that the esophagus can be amply exposed by a transpleural intercostal incision. This incision allows sufficient oversight of the organ for adequate surgical intervention.

37. **Principles for Treatment of Peritonitis.**—Nötzel concludes from experiences at Frankfurt that the benefits of operative treatment of peritonitis are due to the removal of pus and of the cause of the suppuration and the drainage of abscesses and recesses, while it stimulates the peritoneum to increased resistance. The peritoneum owes its resisting power to its destruction and digestion of bacteria and absorption of the products of inflammation. Opium robs the peritoneum of its resisting powers by holding it immovable and thus preventing the distribution of the infectious material over a large surface. Delay should not be considered when peritonitis is once diagnosed, only excepting the irritation of the peritoneum which accompanies gonorrheal affections of the tubes and certain puerperal affections of the uterus and adnexæ. Spontaneous recovery from severe peritonitis is extremely rare. Nötzel believes in copious rinsing of the peritoneum, with ample drainage and counterdrainage. In his hospital a jar holding 150 liters of saline solution, on the floor above, is used to flush the field of operation. The tube and drain are sterilized by steam under pressure through them before they are used. The promotion and maintenance of peristalsis are the chief aims of the after-treatment, and twelve drops of physostigmin salicylate (.02 to 20), by mouth, is preferred by him to subcutaneous use of drugs. From 1,500 to 2,000 c.c. of artificial serum are injected at once after the operation. In the after-treatment analeptics are advocated. Absolute repose should be strictly enforced.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed XLV, page 1910.

39 (XXIX, No. 44, November 4.) *Zur infrasymphysären Blasen-Drainage (of bladder). W. Hannes.

40 Fall von spontaner Uterusruptur bei stehender Fruchtblase (with intact membranes). A. Czyzewicz.

41 Karzinom-Entwicklung an einem nach supra-vaginaler Amputation zurückgebliebenen Cervix-Stumpfe (sixth case on record). R. Lumpe.

42 (No. 45.) *Puerperale Selbst-Infektion. F. Ahlfeld.

43 Ueber Bilharzia-Krankheit der weiblichen Genitalien. C. Goebel.

44 (No. 46.) 2 eigene Beobachtungen von Zwillingsschwangerschaft mit heterotopem Sitz der beiden Eier, je eines intrauterin und extra-uterin gelagert (twin inside and twin outside of uterus). F. v. Neugebauer.

45 Ueber die Entfernung des in der Gebärmutter zurückgebliebenen abgerissenen Kopfes (removal of detached head). Rühl.

46 (No. 47.) Kritische Bemerkungen zu dem Studium des Geburts-Mechanismus (of birth). L. Gigli.

47 Cystische Entartung eines bei einer Radikal-Operation zurückgelassenen Ovariums (Corpus luteum-Cyste). A. Calmann.

48 (No. 48.) Zur Technik der Pubiotomie. W. Pfeilsticker.

49 *Die Bier'sche Stauung in der Gynäkologie (congestive hyperemia). J. Eversmann.

50 *Is Syphilis a More Serious Disease than Gonorrhea?—Ist die Syphilis eine schwerere Krankheit als der Tripper? A. Doktor.

51 Puerperale Selbst-Infektion. H. Natvig.

52 Geburtshelfer-Spekulum (for accoucheurs). Blumm.

53 (No. 49.) Zwillings-Placenta mit einfacher Amnion-Höhle (twins; placenta with single amnion sac). W. Pfeilsticker.

54 Ein seltener Fall von Uterus-Sarkom. T. von Wenczel.

55 (No. 50.) Zur Aetiologie der Uterus-Paralyse. R. Kossmann.

56 Zur Aetiologie des Flatus vaginalis (Garrulitas vulvæ) (four cases). F. Kosmiaski.

57 (No. 51.) Ausgetragene, lebende Drillinge bei Placenta prævia lateralis (living triplets). A. Czyzewicz.

58 *Ein neues Verfahren zur operativen Beseitigung von Total-Prolapsen. M. v. Holst.

59 Zur Sterilisation von Verbandstoffen (dressings). K. Holzapfel.

60 (No. 52.) *Toxic and Fatal Action of Camphor.—Ueber giftige und tödliche Wirkungen des Kampfers. K. Happich.

61 Eine Wochenbettsbinde (abdominal band). H. B. Semmelink (Hague).

39. **Infrasymphysis Drainage.**—Hannes relates the particulars of three cases in which the bladder was drained through a tube introduced between the urethra and clitoris after a plastic operation on the urethra. This allowed the urethra to heal undisturbed by irritation from urine or from a catheter introduced into the bladder through the urethra. The bladder was partly filled first with about 100 c.c. of sterile water to determine the permeability of the new-formed urethra. Then an ordinary trocar, about 5 mm. in diameter, was inserted through a small incision in the mucosa about 2 cm. from the opening of the urethra and easily pushed through into the bladder. The trocar needle was drawn out, but the cannula of the trocar was left to serve as a permanent drain. The small hole made by it closed up at once when the cannula was finally withdrawn.

42. **Puerperal Self-Infection.**—Ahlfeld cites a recent article by Natwig to sustain his assertions that streptococci are found almost regularly in the vaginas of healthy women and that the conditions of child-birth favor the acquisition of pathogenic properties by otherwise harmless saprophytes in these parts. There is always a liability that some of these germs may find their way into the internal genitals and induce self-infection.

49. **Congestive Hyperemia in Gynecology.**—Eversmann reports experiences with local suction applied to the uterus. His apparatus is a glass speculum shaped like a test-tube with a small branching tube near the rounding bottom. A rubber tube connected with this small branching tube has a stop-cock and terminates in the suction pump. The open end of the speculum is applied to the os uteri and a vacuum is produced with the suction pump. The os is sucked far into the speculum and can be seen to be very much congested. He applies this congestive hyperemia for a twofold purpose: to remove the secretions and to stimulate the circulation in the uterus. His experience has been eminently favorable, especially in cases of endometritis with considerable discharge. He applies the suction for half an hour at a time, with intervals of several days, gradually shortening the intervals until the applications are made daily. After five minutes of suction the stop-cock is opened for a full minute. Suction is then applied again, this alternation of suction and normal atmospheric pressure being one of the factors in the treatment. Tough and painful cords in the Douglas pouch also gradually softened and were absorbed in the course of this treatment, possibly owing to the better conditions of the circulation in the parts or to massage from the alternating drawing outward and retraction of the os uteri. He has had no experience yet in the application of this treatment to amenorrhea or as a preliminary to dilatation of the os uteri before artificial delivery. In slight lymphangitis of the breast the results of this congestive hyperemia were remarkably successful, as also in cases of insufficient milk secretion. When the suction apparatus was applied in this [illegible]rnating technic for thirty minutes twice a day, the previously small amount of milk soon became ample for nourishing the child.

50. **Is Syphilis a More Serious Disease Than Gonorrhea?**—Doktor points out that gonorrhea may cause fatal affections, although the primary gonorrheal cause may have been long forgotten. He cites a number of instances of fatal retention from stricture, prostatitis, nephritis, etc., the result of gonorrhea. He also relates a number of cases of constant illness on the part of the wife, recurring inflammation, weakness, sterility, etc., destructive of all happiness in the home. Syphilis is less insidious and its ravages are confined more to the unmarried and to males, while the ravages of gonorrhea are felt more in the family and by the wives. Both should rank as extremely and equally serious diseases.

58. **Treatment of Total Prolapse of the Uterus.**—Holst's method consists in supravaginal amputation of the uterus, with subperitoneal care of the stump, concluding with fixation of the stump to the abdominal wall. It is applicable only to women near the menopause, but promises well in such cases. As the cervix, not the fundus, is fastened to the abdominal wall, the walls of the vagina are held up and there is no secondary prolapse of the vagina.

60. **Toxic Action of Camphor.**—Happich reports a death after injection of camphor in an eclamptic patient, and discusses the limits of the therapeutic dosage. Part of the camphor enters into a harmless combination with glycuronic acid in the body and part is exhaled through the lungs. The fraction remaining is what exerts the therapeutic action on the vascular system. He concludes from his research that the fatal dose is about 1 gm. to the pound of body weight of a healthy human being or animal. The toxic dose is a third less. These proportions are less in persons who at the moment of the injection are not able to form or have not already on hand the amount of glycuronic acid necessary to combine with the camphor to form the harmless campho-glycuronic compound. As glycuronic acid is a product of the oxidation of grape sugar, when there is a lack of either grape sugar or of oxygen there will be correspondingly less glycuronic acid, and in such case a smaller proportion of camphor will have a toxic action. This assumption was confirmed by his experiences with twenty out of thirty-five rabbits on which he experimented. Healthy rabbits bore intravenous injection of .08 gm. of camphor witnout apparent injury, but this amount proved rapidly fatal if they had been fasting, and thus deprived of grape sugar, for from six to nine days previously. Similar experiments in which the animals were deprived of oxygen, instead of the grape sugar, proved equally fatal when the camphor was injected, the animals succumbing after injection of .02 or .04 gm. of camphor, from one-fourth to one-half the previously tolerated dose. These findings were corroborated by the effect of glycuronic acid injected at the same time with the camphor. Animals thus injected showed little, if any, disturbances and were soon as lively as ever, while the controls all died. These experiences warn physicians to be cautious in administering camphor to patients whose carbohydrate metabolism is defective, such as cachectic persons or those in inanition, or in severe cases of diabetes or chloral poisoning. On the other hand, great caution is necessary in administering camphor to persons with a deficient supply of oxygen, as in carbon dioxid intoxication, in severe cardiac defects, in advanced bilateral pneumonia, in severe sepsis and to eclamptics. In case of eclampsia and states of psychic excitement, camphor is further contraindicated on account of the fact that its base of action is in the central nervous system.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

62 (XXXI, No. 50.) Behandlung der Scoliose. O. Vulpius (Heidelberg).
63 *Pathogenese des Tetanus. L. Zupnik (Prague).
64 Zur Weil'schen Krankheit. Knauth.
65 *Zur chirurgischen Behandlung der puerperalen Pyämie. E. Opitz (Marburg).
66 Ein technischer Beitrag zur Finsen-Therapie nebst Bemerkungen über Lupus-Behandlung. P. Wichmann (Hamburg).
67 *Eine neue physikalische Behandlungs-Methode der Seekrankheit (seasickness). W. E. Peters.
68 Ueber "physiologische" Wund-Behandlung. Esch.

63. **Pathogenesis of Tetanus.**—Zupnik's researches have demonstrated, he thinks, that the tetanus virus acts in two ways: it increases reflex excitability on one hand, and on the other it causes rigidity in the muscles. The virus acts on the muscular system and on the spinal cord. It affects the latter like strychnin, but in the muscles it induces solely rigidity. Both the muscles and the spinal cord receive the virus by way of the blood alone. The practical consequences of these assumptions, which he sustains by the results of experimental research and of clinical experience, are that it is useless to inject antitoxin into the nerves, spinal cord, subarachnoid space or brain, as the virus circulating in the blood can be reached just as well by a subcutaneous injection. Narcotics and the prophylactic avoidance of reflex excitations are the basis of treatment of the increased reflex excitability, but we have still to seek for a remedy that will conquer the permanent rigidity of the muscles.

65. **Surgical Treatment of Puerperal Pyemia.**—Opitz relates a case in which he followed Baumm's technic and ligated the efferent veins as the last resort in puerperal pyemia. The

patient died, but an uncompensated heart affection was chiefly responsible for the fatality. This brings to nineteen the number of cases of puerperal pyemia in which operative treatment was attempted, with six recoveries. In his experience with this affection Opitz has witnessed thirteen recoveries in eighteen cases treated by medical measures alone. Recovery is, therefore, possible without an operation. Nevertheless he regards surgical treatment as a great advantage, only he urges that it should be applied with discrimination.

67. **Vibrating Chair as Preventive of Seasickness.**—Peters describes an electric chair which is being tested on ocean steamers as a preventive of seasickness. The seat of the chair is in constant motion, resembling the jolting of an automobile. This prevents the perception of the motion of the boat, it is claimed. His experience has been rather encouraging with it, although he suggests certain modifications.

Jahrbuch für Kinderheilkunde, Berlin.

Last indexed XLV, page 1370.

69 (LXII, No. 4.) Morphologische und biologische Untersuchungen über die Darm-Bakterien des Säuglings (bacteriology of infants' intestines). E. Moro.
70 Biologische Untersuchungen über die Milchverdauung beim Säugling (digestion of milk by infants). F. Hamburger.
71 Gastric Digestion in New-born Nurslings.—Magenverdauung bei neugeborenen Brustkindern. Id. and B. Sperk.
72 *Post-Mortem Study of Tuberculosis in Children—Tuberkulose im Kindesalter. Id. and E. Sluka.
73 Serum-Krankheit. C. v. Pirquet.
74 Bakteriologie und Epidemiologie der Ruhr im Kindesalter (dysentery in children). L. Jehle (Escherich's clinic, Vienna).
75 (No. 5.) Absorption of Fat.—Untersuchungen über Fettresorption auf Grund der chemischen Zusammensetzung der Fette. A. F. Hecht. (Ibid.)
76 *Die postskarlatinöse Lymphadenitis. B. Schick (Ibid.)
77 Serum-Therapie und Blutforschung (study of the blood). H. Koeppe.
78 Resultate der Anwendung des polyvalenten Antistreptokokken-Serums von Moser. I. Winocouroff (Odessa).
79 Zur Biochemie der Milch (of milk). F. v. Szontagh.
80 (No. 6.) Knochenveränderungen beim Skorbut (bone changes). E. Looser.
81 *Zur Kenntnis der Ekzem-Todes-Fälle (deaths). J. Bernheim-Karrer.
82 Chronische Magen-Darm-Dyspepsie im Kindesalter (in children). R. Schütz.
83 Zur Ätiologie und Klinik des Stridor inspiratorius congenitus. L. Ballin.
84 *Ein neues Symptom bei Tetanie des Kindesalters—das Tetanie—Gesicht (tetany face). A. Uffenheimer.
85 Apparat zum Kochen oder Pasteurisieren von Kinder-Milch (milk). E. Müller (Berlin).

72. **Postmortem Study of Tuberculosis in Children.**—This communication from Escherich's clinic at Vienna reports the findings of the prosector, Ghon, in 401 autopsies of children. Of this total, 160, or 40 per cent., were found affected with tuberculosis. Death was due to the tuberculosis in 100 per cent. of the young infants, in 68 per cent. of the children up to 2 years old, in 65 per cent. of the children up to 5 and in 47 per cent. of the children between 10 and 14. The tuberculosis was found active in 40 out of the total 160, inactive in 10 and healed in 27. No signs of healed lesions were found in any children under 3, but the proportion increased progressively with this age upward to 47 per cent. of the 17 children between 10 and 14. The findings confirm those of Naegeli and others in regard to the increasing frequency of tuberculosis as the individual increases in years, with a corresponding decrease in the mortality of the tuberculosis. Fully 60 per cent. of the children who died from tuberculosis succumbed to tuberculous meningitis, but in 64 out of 67 such cases the meningitis was secondary to tuberculosis of some other organ, subacute or acute general tuberculosis. In only 27 per cent. of the entire 110 cases in which death had been due directly to the tuberculosis were the lesions those generally observed in adults; all the others were those of tuberculous meningitis (60 per cent.) and miliary tuberculosis. The mesenteric glands were found affected in only four instances. There were no indications of primary intestinal tuberculosis in any case. The article compares the findings recorded with those of Naegeli and other investigators, the concordance in the results being striking.

76. **Post-scarlatinal Lymphadenitis.**—Schick describes the glandular affection which frequently appears in the third or fourth week after the first symptoms of scarlet fever. The glands involved are in the submaxillary region, and their inflammation and tumefaction are the most frequent cause for the recrudescence of fever during convalescence. This lymphadenitis enables a retrospective diagnosis of scarlet fever. The treatment found most effectual was cold applications at first, with hot applications later if the affection progresses, and incision in case of fluctuation. The general health does not seem much affected, frequently in marked contrast to the high fever. In a few cases the child seemed sick, the symptoms suggesting, to a certain extent, those of scarlatinal nephritis. He has observed seventy-one cases of the lymphadenitis in 990 patients with scarlet fever during the years 1902-1905. Usually but one of the submaxillary glands is affected.

81. **Sudden Death in Course of Eczema.**—Bernheim-Karrer discusses the mystery of the sudden deaths of children with eczema of the scalp and face. In one such case the autopsy revealed an unsuspected streptococcus focus in one lung, the action at a distance of these germs having induced slight endocarditis and pleural effusion. In another case an infant with eczema exhibited attacks of heart weakness, possibly from a similar action of the germs on the heart muscle. Another child of eleven months was in his care for recurring eczema of the scalp and face. The child was brought to him, after two months' absence, on account of a new patch on the cheek, and he was impressed with the dull look in the eyes, but nothing abnormal could be detected in lungs or heart. The cervical glands were swollen. He ordered a salve of ichthyol and zinc oxid. The child seemed unusually quiet and was found dead the second morning. Staphylococci were discovered in the cutaneous lesions and in the internal organs. Their numbers were not large, but it is possible that the eczema may have generated toxins, similarly to extensive burns, which may have induced an actual toxic form of staphylococcus mycosis. This assumption was confirmed by a number of experiments on animals. Infection with the staphylococcus alone did not cause by any means such severe symptoms as when the staphylococcus infection was supplemented by a cutaneous lesion, such as a croton-oil blister. The heart seemed to suffer particularly in these cases. The researches reported emphasize the importance of careful oversight of the heart action in cases of extensive eczema. Possibly the blood pressure might afford useful information.

84. **The "Tetany Face."**—Uffenheimer gives several illustrations of children to show the peculiar expression characteristic of tetany. It may be observed even before any other signs are manifest. The muscles of the face feel the influence of the impending tetany and the face assumes an expression which is the first faint suggestion of the *risus sardonicus* of true tetany. He has observed more than fifty cases, his attention being attracted to the children by this tetany face, the application of electric tests or later events confirming his diagnosis. Differentiation at this early stage allowed prompt treatment and cured many of the children without the outbreak of actual tetany, the Chvostek and Trousseau signs subsiding as the children's expression returned to normal. The muscles affected are those innervated by the facial nerve; the face is drawn up and wrinkled like that of a harassed adult, worried and morose.

Münchener med. Wochenschrift, Munich.

86 (LII, No. 47.) *Torsion of Tumor in Omentum.—Ueber gedrehte Netzgeschwülste mit und ohne vorgängigen Bruch. Riedel.
87 *Ants as Carriers of Typhoid Infection.—Ueber die Verschleppung typhöser Krankheiten durch Ameisen und die Pathogenität des Löffler'schen Mäusetyphusbazillus für den Menschen. G. Mayer.
88 Beziehung der Wirkung der photodynamischen Stoffe zu ihrer Konzentration (relations between action and concentration of photodynamic substances). A. Jodlbauer and H. v. Tappeiner.
89 *Elimination of Uric Acid in Gout.—Harnsäureausscheidung bei Gicht. Eschenburg (Hoppe-Seyler's service, Kiel).
90 *Vorgänge der Selbstreinigung im Wasser (self purification of water). Hofer.
91 *Ueber den Holzmindener Fall von fraglicher Veronal-Vergiftung (poisoning). E. Harnack.
92 Increasing Appreciation of Importance of Uterine Myoma.—Die Verschiebungen in der klinischen Beurteilung und operativen Behandlung der Uterusmyome. A. Sippel.
93 Retroflexio und Vibrations-Massage. K. Witthauer.
94 Habituelle Obstipation infolge von Dilatation und Senkung des Coecums. F. Schilling.
95 Complicationen nach verschleppten eitrigen Appendicitiden. Amberger.

96 *Congestive Hyperemia in Treatment of Inflammatory Affections of Head and Face.—Behandlung entzündlicher Erkrankungen von Kopf und Gesicht mit Stauungshyperämie. W. Keppler. (Commenced in No. 45.)

86. **Torsion of Tumor in Omentum.**—Riedel has encountered six cases of tumor in the omentum complicated by torsion, and thinks that this condition is not so rare as generally supposed. Four of the patients were operated on for assumed appendicitis. In two patients the twisted portion of omentum was in a hernia. In describing the details of these cases and discussing the removal of the tumors after ligation of the pedicle he emphasizes the importance of using catgut—never a foreign material like silk. This is especially important in case of the omentum, as its tissue is exceptionally liable to react with a serous inflammation to the slightest injury. It generally subsides spontaneously, but in case of the presence of a foreign material like silk there is liable to be prolonged and serious trouble. He has had some experiences of this kind, as he relates in detail.

87. **Ants as Carriers of Typhoid.**—Mayer describes an experience with some laboratory mice which indicates that ants may carry typhoid infection. Ants had access to the cages of some mice infected with mouse typhoid bacilli, and also to some other cages of sound animals. Soon after the presence of the ants was noticed, all the sound animals sickened with an epidemic of mouse typhoid. Plates of culture media over which the ants were allowed to run developed colonies of the mouse typhoid bacilli in a single straight line along the course of the ants, showing that the bacilli must have been retained as bees hold honey material, or else must have been passed in their dejecta. The colonies of other micro-organisms that developed on the plates were in parallel rows, corresponding to the ants' legs. Soon after these experiences Mayer himself developed an acute, brief but quite severe illness from infection with the mouse typhoid bacilli. The latter were found in his stools and urine, and the agglutination test was positive for the mouse typhoid bacilli at 1/250 during the second week. Severe pains in the epigastrium were a prominent feature of the illness, with diarrhea, chills, slight temperature and great depression. He was able to be up and about in five days, but the pains did not entirely subside until the sixth week.

89. **Elimination of Uric Acid in Gout.**—Eschenburg had occasion to make a prolonged and careful study of the metabolism in two gouty patients—an opportunity which seldom happens, as patients in the gouty category are generally unwilling to submit to prolonged research of this kind. The particulars learned are arranged for comparison with the findin s in a healthy control subject. They show that the elimination of uric acid is quite irregular. Alcohol seems to increase its elimination in young persons, bu does not have this effect in older subjects.

90. **Self-Purification of Water.**—Hofer has been making an extensive study of local conditions and announces in consequence that the self-purification of water is a biologic process, depending on the weeds and micro-organisms in the water. A rapidly-flowing stream does not purify itself so readily as a more sluggish stream with a more abundant flora. Where the river at Munich has been walled in and its channel narrowed it does not purify itself, but where it spreads out on a natural-soil bed and weeds accumulate the water soon becomes purified. He advocates draining organic matters into simple natural ponds. Instead of cementing the bottoms of these tanks the natural-soil bottom should be left and as large a surface provided as possible. The ponds should be stocked with appropriate plants and fish, and the waters will spontaneously purify themselves without putrefaction of the organic matters. He cites instances where this has been successfully accomplished for isolated establishments or villages. In one the waters from a factory contained 198 mg. of sugar to the liter, and 100 cm. of such water flowed daily into a pond covering 800 square meters, this residual water being diluted with twice the amount of pure spring water. The sugar was completely destroyed and the nitrogen dropped from 9 to 5 mg. The supply of spring water was cut off after a time and the normal biologic process was thus suspended. The pool is now scarcely more than a cesspool. The fish that can be raised in a pond where the biologic process of self-purification is going on properly might prove a source of revenue.

91. **Medicolegal Aspect of Case of Veronal Poisoning.**—Harnack discusses a recent sensational case, in which a physician prescribed for tapeworm 5.5 gm. extract of male fern in capsules with 10 gm. (155 grains) of kamala as the "box powder." The patient took the entire contents of the box and died soon after. Chemical tests indicated veronal poisoning, and it was assumed that the druggist had used veronal instead of the kamala ordered. Harnack's testimony is to the effect that the intoxication was the result of the combination of the action of the male fern and of the drug veronal.

96. **Congestive Hyperemia in Treatment of Inflammatory Affections of Head and Face.**—This article issues from Bier's clinic at Bonn and gives the details of the successful application to the head and face of his method of inducing therapeutic congestion by constriction. The anatomic conditions, it states, are peculiarly favorable for this treatment in the head and face, as the blood vessels are so numerous and the blood supply so ample that even very slight constriction of the neck will produce the congestive hyperemia desired. This revolutionary treatment of inflammatory conditions has proved especially effectual in inflammatory affections of the eyes, ears, nose and accessory cavities. The subjective disturbances were always relieved more or less, the subsidence of the pain being so marked that the patients soon clamored for the "neck garter." As the clinic is surgical, the material was not very well adapted for such therapeutic research, the patients being all in such advanced stages of the disease that they had been referred to the surgeon. The results observed, Keppler remarks, should encourage extensive trials of the technic by ophthalmologists, otologists and practitioners generally, and he is sure that it will soon win friends. He relates the details of a number of cases of acute mastoiditis favorably influenced by this treatment. The results were fully as good, if not better, than from extensive surgical intravention. The affection heals without necrosis of the bone, the same as in osteomyelitis of the long bones treated with the congestive hyperemia in the same way. One patient with suppurative meningitis was also treated; the pain was arrested at once, followed by the rapid retrogression of the objective symptoms. Similarly favorable results were obtained in the single case of extremely severe chorea treated. In some cases of secondary parotitis recovery proceeded rapidly under this treatment and all complications were averted. There has been no opportunity in the clinic to observe the effect of this procedure in primary parotitis. In one case of acute dacryocystitis this treatment alone proved promptly effectual; in a second case an incision was made into the process. The cure was strikingly prompt in both cases. Large abscesses in the jaws also healed rapidly under the congestive hyperemia. The constricting band used is of cotton elastic, a little over an inch wide (3 cm. for adults and 2 cm. for children). It is finished with a hook in one end and a series of eyelets close together in the other, so that the band can be hooked tighter or looser. A single layer of muslin inside prevents chafing. The band is hooked at the back, and at this point has a small square of felt to protect the skin from hook and eyelets. The skin can be toughened by being washed with alcohol every day. Children have worn the constricting band for weeks in some cases, but no unpleasant by-effects were ever noted, not even in arteriosclerotic patients. The elastic must be replaced every few days, as it soon deteriorates from the moisture of the skin. The constriction should cause the face to look slightly bluish-red and somewhat bloated; the inflamed part usually shows a localized red fiery edema. The constriction is applied for from twenty to twenty-two hours a day. A remarkable evidence of its efficacy is that the pains are liable to recur as soon as the band is removed. The principle followed was to open an outlet for the secretions, if possible, with a very small incision, and then to apply the constricting band. An incision much smaller than under other circumstances answers the purpose, the congestive hyperemia completing the task. The process heals without the destruction of the bone and soft parts, which has hitherto been supposed inevitable. The incision is made at once, without waiting for fluctuation, and the

abscess or other inflammatory affection is aborted or rapidly heals. The ideal for therapeutic congestive hyperemia, however, is to apply it at the very first indications of trouble.

Zeitschrift für Geb. und Gynäkologie, Stuttgart.
Last indexed XLV, pages 112¼ and 1286.

97 (LVI, No. 2.) Eine durch Vincent'sche Bakterien verursachte Puerperal-Erkrankung. K. Schmidlechner.
98 Ueber Vulva-Affectionen und ihre gynäkologische Bedeutung (Schweissdrüsen-Karzinome). H. Ruge.
99 *Stellung und Bedeutung des Streptococcus pyogenes in der Bakteriologie der Uterus-Lochien normaler Wöchnerinnen. F. Schenk and A. Scheib.
100 Erfahrungen über dilatierende Operationen in der Geburtshilfe. Hammerschlag.
101 *Spontan-Heilung des Chorion-Epithelioms. D. v. Velits.
102 Teratoma peritonei mit ausgebreiteten Disseminationen. C. Fleischmann.
103 Spontaneous Injuries of Vagina During Delivery.—Zur Lehre von den spontanen Geburtsverletzungen der Scheide. A. Sitzenfrey.
104 *Malignant Tumors in Abdominal Walls After Removal of Benign Ovarian Tumors.—Entstehung maligner Bauchdeckentumoren nach Entfernung gutartiger Eierstocksgeschwülste. O. Polano.

99. Streptococci in the Lochia of Normal Parturients.—Schenk and Scheib report that about a third of normal parturients harbor pathogenic streptococci in the lochia, virulent for mice and rabbits. They examined 100 normal parturients and found positive results in a third from the seventh to the ninth day. Before this time the discharge is almost always sterile—that is, as late as the fifth day. They review the articles that have previously appeared on the subject and discuss the reasons why the streptococci do not cause trouble in these cases, without coming to any definite conclusion.

101. Spontaneous Cure of Chorioepithelioma.—In one of the two cases described, the microscope revealed the elements of a chorioepithelioma in the scrapings of the uterus. A mole had been diagnosed and masses removed from the uterus on several occasions. Recurring hemorrhages finally proved fatal. Velits believes that if the entire uterus had been removed early the patient might have been saved. She was a xvi-para, with a history of three abortions. The second patient was a younger woman, a v-para, with two abortions. **The diagnosis** of a mole was confirmed by removal of necrotic masses from the uterus. The symptoms were very severe, but the microscope failed to reveal any evidences of chorioepithelioma, and before long the patient had entirely recovered. The microscope is the test for malignancy in these cases.

103. Spontaneous Injury of Vagina During Delivery.—Sitzenfrey reports a case in which the spontaneous delivery of a rather small child caused, under his eyes, a rupture of the vagina, of the floor of the pelvis and of the perineum. Notwithstanding all his efforts at hemostasis, the hemorrhage was so severe that the patient succumbed.

104. Cancer in Abdominal Wall After Removal of Benign Ovarian Tumors.—Polano has had a case of this kind, of which he relates the details, with illustrations. He has found records of seven similar cases in the literature. He admits four explanations of the phenomenon. The general assumption at present is that the benign tumor cells transplanted into the abdominal wound undergo cancerous degeneration in the new culture medium. There is also always a possibility that the ovarian tumor may have been malignant; also that an ignored cancer in the stomach, intestine, uterus or elsewhere may induce a metastatic tumor in the abdominal cicatrix. The only other plausible explanation is that the cancer may originate primarily in the abdominal cicatrix.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

HANDBOOK FOR ATTENDANTS ON THE INSANE, with an appendix giving the Regulations for the Training and Examination of Candidates for the Certificate of Proficiency in Nursing of the Medico-Psychological Association of Great Britain and Ireland. Fourth edition. Reprinted, with Revised Regulations. Published by the authority of the Medico-Psychological Association. Cloth. Pp. 158. Price, 80c net. Chicago: W. T. Keener & Co.

THE ANIMAL PARASITES OF MAN. A Handbook for Students and Medical Men. By M. Braun. Third enlarged and improved edition, with 294 illustrations. Translated from the German by P. Falcke, brought up to date by L. W. Sambon, M.D., and F. V. Theobald, M.A. Cloth. Pp. 453. Price, $5.00 net. New York: William Wood & Co.

DISEASES OF INFANCY AND CHILDHOOD. Designed for the Use of Students and Practitioners of Medicine. By H. Koplik, M.D. Second edition, thoroughly revised and enlarged. Illustrated with 106 engravings and 33 plates. Cloth. Pp. 885. Price, $5.00. Philadelphia: Lea Brothers & Co., 1906.

TENTH ANNUAL REPORT OF THE BOARD OF MANAGERS of the Springfield State Hospital of the State of Maryland, Sykesville, Md., to His Excellency the Governor of Maryland, October 1, 1905. Paper. Pp. 77. Baltimore: Sun Book and Job Printing Office, 1906.

PHYSIOLOGY AND THERAPEUTICS OF THE HARROGATE WATERS, BATHS AND CLIMATE. Applied to the Treatment of Chronic Disease by W. Bain, M.D. and W. Edgecombe, M.D. Cloth. Pp. 300. Price, $2.60 net. New York: Longmans, Green & Co., 1905.

FIFTH ANNUAL REPORT OF THE NEW YORK STATE HOSPITAL for the Care of Crippled and Deformed Children. For the year ending September 30, 1905. Hospital located at West Haverstraw, N. Y. Paper. Pp. 27. Albany, N. Y.: J. B. Lyon Co., 1905.

A TEXT-BOOK OF PSYCHIATRY, for Physicians and Students. By L. Bianchi, M.D. Authorized Translation from the Italian by J. H. MacDonald, M.B., Ch.B. 106 illustrations. Cloth. Pp. 904. Price, $6.00 net. New York: William Wood & Co.

DIE HERZLEIDEN Ihre Ursachen und Bekämpfung. Gemeinverständliche Darstellung. By O. Burwinkel. 7-9, vermehrte und verbesserte Auflage. Paper. Pp. 56. Price, 1.20 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

LECTURES ON TROPICAL DISEASES, Being the Lane Lectures for 1905, Delivered at Cooper Medical College, San Francisco, U. S. A., August, 1905, by P. Manson. Cloth. Pp. 230. Price, $2.50 net. Chicago: W. T. Keener & Co., 1905.

RELATIONS OF DISEASES OF THE SKIN TO INTERNAL DISORDERS, with Observations on Diet, Hygiene and General Therapeutics. By L. D. Bulkley, A.M., M.D. Cloth. Pp. 175. Price, $1.50. New York: Rebman Co., 1906.

DER ORDEN DER TRAPPISTEN und die vegetarische Lebensweise. By H. Dr. Suchler. Zweite vermehrte und verbesserte Auflage. Paper. Pp. 23. Price, 60 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

CHANGES PRODUCED BY INFLAMMATION IN THE CONJUNCTIVA (Hunterian Lectures, R. C. S., 1905). By M. S. Mayou, F.R.C.S. Cloth. Pp. 179. Price, $2.75 net. New York: William Wood & Co.

TABER'S POCKET ENCYCLOPEDIC MEDICAL DICTIONARY. Edited by C. W. Taber, and associate editor, N. Senn, M.D., Ph. D., LL.D., C.M. Flexible leather. Pp. 418. Chicago: C. W. Taber, Publisher.

HERZSCHWÄCHE UND NASSENLEIDEN. By Dr. med. R. Cholewa. Mit einer Abbildung. I. Folge. Paper. Pp. 22. Price, 1 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

INFLUENCE OF THE MENSTRUAL FUNCTION ON CERTAIN DISEASES OF THE SKIN. By L. D. Bulkley, A.M., M.D. Cloth. Pp. 108. Price, $1.00. New York: Rebman Co., 1906.

THE PATHOLOGY OF THE EYE. By J. H. Parsons, B.S., D.Sc. Vol. II. Histology.—Part II. Cloth. Pp. 770. Price, $3.50. New York: G. P. Putnam's Sons, 1905.

DIE STELLUNGNAME des Arztes zur Naturheilkunde by Dr. Esch in Dendorf. Paper. Pp. 12. Price, 40 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

KETZERISCHE BETRACHTUNGEN eines Arztes by Dr. Fr. Erhard. Paper. Pp. 68. Price, 1.40 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

HYGIENE IN DEN BERGEN. By Dr. med. L. L. Kleintjes. Paper. Pp. 21. Price, 50 mk. Munich: Verlag der Aerztlichen Rundschau, 1906.

NEW PATENTS.

Recent patents of interest to physicians:

808433. Abdominal supporter or bandage. Wright R. Cartledge, Philadelphia, Pa.
808520. Holder for medicines or other substances. Vernon and C. Driskell, Ghent, Ky.
808296. Artificial foot. Frank W. Merrick, Chicago.
808299. Device for cleaning capsules. Otto E. Mueller, Louisville, Ky.
37760. Design, medicinal tablet and pelloid box. Frederic H. Putnam, Boston.
808967. Measuring spoon. Wm. H. Arrowsmith, Oakland, Cal.
808624. Sanitary napkin. Perry S. Bauer, Chicago.
808635. Apparatus for treating diseased tissues. Antonio Ciolfi and R. A. Case, Cleveland, Ohio.
809051. Invalid bed. Lydia A. Goodson, Elgin and W. A. Nason, Algonquin, Ill.
808845. Medicine spoon. Wm. L. Jerkins, Moultrie, Ga.
809119. Finger curette. Maximilian J. C. Leuchs, New York.
808697. Tongue. Milton B. Smyth, Holton, Kans.
808785. Invalid lift. Orrin B. Thompson, Jersey, Ohio.
809662. Inhaler. Joshua Barnes, New York.
809360. Apparatus for promoting growth of hair. N. W. Dible, Kansas City, Mo.
809797. Artificial hand. Archibald Grogan, London, England.
809579. Combined tweezers, needle, and eye-curette, Ernesto Pastore, New Haven, Conn.
809650. Combined hot-water bag and syringe. Margaret Van Tassel-Beck, Cleveland, Ohio.
809347. Antitoxin for fatigue and making same. Wolfgang Weichardt, Berlin, Germany.
809875-6. Artificial limb. George E. Wilkins, Oshkosh, Wis.
810115-810139. Absorbent bandages for surgery, etc. Willard R. Green, Muscatine, Iowa.
810355. Orthopedic appliance for curing knock-knees, etc. Oskar Semeleder, Vienna, Austria-Hungary.
810180. Artificial limb. Harris C. Wintermute, Kansas City, Mo.